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A STUDY OF EIGHT HUNDRED AND FIFTY CASES OF SCARLET FEVER WITH A MORE PARTICULAR CONSIDERATION OF SEVENTY-ONE FATAL CASES

BY JOHN McCRAE, M.D. (Tor.), M.R.C.P. (Lond.)

*Senior Assistant Physician, Royal Victoria Hospital; Physician to the
Alexandra Hospital for Contagious Diseases, Montreal; Lecturer
in Medicine and in Pathology, McGill University*

PART II

A MORE PARTICULAR CONSIDERATION OF SEVENTY-ONE FATAL CASES.

THE seventy-one cases here dealt with, sixty-eight of which belong to the hospital series, are considered by themselves, because cases so severe as to threaten life are vastly different in their characters from ordinary cases.

The diagnosis of cases of scarlet fever that are likely to die is not often in doubt, because the throat symptoms, if not the rash, are almost always well marked; nor is it difficult to prognosticate the fact that the patient will have to fight for life, or even that he or she will die. The case is an equation of three quantities: we know fairly accurately the intense severity of the intoxications concerned; we know our own powerlessness, in the absence of specific remedy; the resistance of the patient is a variable quantity.

For practical purposes, these fatal cases fall readily into groups: first, those in which intense scarlet fever is essentially the fatal disease; second, where scarlet fever paves the way for the march of septicæmic infection, in which the latter completely overshadows, clinically and pathologically, the former; third, cases where the fatal issue depends

upon an associated disease, as diphtheria, or a sequel, as nephritis; fourth, where some accidental cause that cannot be foreseen operates. These groups are stated in the order of their relative frequency.

INTENSE SCARLET FEVER

It is of purpose that the term "fulminating scarlet fever" is not used, because, striking though the term is, it is apt to be misapplied. I remember only one case to which the term "fulminating" properly did apply; namely, a young woman who died in about twenty-four hours, whose rash appeared only one or two hours previous to death.

The age of the fatal cases of intense scarlet fever is of interest: eight out of thirty-four, or twenty-four per cent., were adults, whereas the adult sufferers from scarlet fever are only about five per cent. of all.

The cases in this sub-series are probably best referred to as cases of "intense scarlet fever," and include those which die in periods varying from four to nine days, in whom the scarlet fever symptoms and signs prevail from the very first and are present to the last. The average duration of thirty-four cases was 6.3 days. These cases are not easy to differentiate from some of the cases of scarlet fever with septicæmia, but post-mortem examination will generally serve to differentiate the two forms if secondary septic foci are not apparent. In intense scarlet fever, of which we are speaking, the body shows evidences of a death from toxæmia, and actual, bacterial, secondary lesions may not be found at all. The heart, the liver, and the kidneys show very marked cloudy swelling, and it is the kidney of this kind of case that has given rise to the familiar picture of scarlatinal nephritis.

Of the thirty-four cases here referred to, the most frequent complication, if the term may be so used, is a virulent stomatitis, or pharyngitis, or tonsillitis, or all three together, coupled with an intense mucopurulent rhinitis,—seventeen cases. This is a symptom which the case of ordinary scarlet fever does not present. The condition of the mouth and nose can be recognized at a glance. At times the mouth can only be partly opened: thick gummy mucus stretches from lip to lip, from lips to teeth, and from teeth to teeth. If the tongue can be seen, it is most often coated,—twenty-two cases out of thirty in the present series,—yet it frequently happens that the wet, coated tongue, in a day or so, gives place to a dry, fissured tongue, which cracks easily and bleeds readily. The lips externally are dry, soon crack and bleed, with ulcerated patches at the corners of the mouth. The nose runs profusely, and the discharge from it being serous, rapidly becomes thick, tenacious, and yellow in colour,—typical mucopus. This erodes the edges of the nostrils, the upper lip, and in spite of care,

will frequently form an infected track upon the skin of the cheek on which it runs, as the child lies on its side. The tonsils are very frequently enlarged, look œdematous, are at times covered by purulent areas or by membrane,—ten cases out of thirty,—and lying in all the interstices is mucopus which the child is not able to expel, nor the attendant to remove. If complete through-and-through irrigation from mouth to nose, or nose to mouth, be successfully done, nevertheless, a few minutes afterwards the same purulent fluid, perhaps diluted by the residue of the water, will be seen to drool from the mouth. This frequent accompaniment of scarlet fever seems to me to be of the strongest prognostic value. Such a patient at the best will have an extremely hard fight for life.

Speaking from recollection, one is tempted to say that not more than one out of ten such cases survives. The prevention of this severe stomatitis and rhinitis is occasionally accomplished by the removal of tonsils or of adenoids prior to the onset of infection. There are in my mind two cases, whom I have recently known to recover, who would, humanly speaking, certainly have died had the previously choked-up condition of the upper air passages been allowed to continue. It need scarcely be said that, in the course of the disease, no remedial measure of this kind can be considered.

Symptoms referable to the nervous system depend largely upon the age of the patient. Children under three years of age generally manifest intense restlessness, and frequently scream as if in pain. Beyond this age delirium is very much the rule, and is almost certain to be present in patients over ten. The delirium is rarely noisy, but most frequently manifests itself by attempts to get out of bed and by incoherent talking, and in one eleven-year-old girl in this series there was present a remarkable type of furious delirium, in which she frequently tried to bite her attendants. Of thirty-four cases, eighteen were delirious, and one, aged two and a half, had repeated convulsions.

In my own experience convulsions, apart from definite cause, such as uræmia, or meningitis, are extremely rare, and, save for the incoherence, the delirium can be described as quiet rather than noisy. A stuporous condition is frequent and adds to the difficulty of nourishment and of mouth cleansing. A period of coma lasting two days, has been seen in this series. A severe case need not have a rash of maximum intensity, although such is the rule; in twenty-seven of these cases it was of maximum intensity in only eleven, of moderate grade in eight, and slight in six. Only fourteen of thirty-three cases showed a hæmorrhagic rash, and on several occasions this was just before death.

The alimentary system, in the ordinary case of scarlet fever free from disturbance, is seriously affected in many of the intense cases: vomiting occurs perhaps less frequently than might be expected,—thirteen; while in most of the cases and practically all the young cases, there is diarrhoea with green, fetid stools,—nineteen, or fifty-six per cent. The diarrhoea is rarely very severe, attaining to three or four stools in the day, and the autopsy protocols do not often mention a notable inflammation of the bowel surface. Still, the clinical fact remains.

On account of the youth of the patient, or unconsciousness, or delirium, it is generally not possible to get proper specimens of urine: in twelve cases, albumen or casts were present in ten, and one of the two negative ones depends on a single examination; presumably there is in every case, at some period, albuminuria.

The fever is always high. The average of these cases was from 100.2°, as the average lowest point, to 105.4° as the average highest. This does not include one case whose ante-mortem temperature was 110°. There is a constancy about the temperature line on the charts, and a lack of yielding from day to day, as well as a lack of response to sponges or packs, that is notable. That three of these thirty-four cases died with a terminal lobular pneumonia does not suffice to put them into the class next to be considered.

Autopsy findings, which are to be had in twenty-seven cases of the series, are generally disappointing. There are signs of toxicity rather than of sepsis; cloudy swelling of the heart, liver, and kidneys, and petechial hæmorrhages of various internal mucous and serous surfaces, as well as occasionally of the skin, are found. The microscopic examination of the kidneys usually shows scarlatinal nephritis, or if not a typical picture of it, an intense toxic destruction of tubules. The extreme hepatitis is quite like that seen in eclampsies, and, on the average, of quite as high a grade.

SCARLET FEVER WITH A SECONDARY SEPTICÆMIA

There are nineteen of these, with an average duration, after excluding two unusual cases, of 17.4 days; this is in marked contrast to the six days of the last series; the duration of the shortest illness was eight days and of the longest twenty-seven.

The essential point about the septicæmic cases is that organisms are multiplying in the blood and in secondary metastatic foci. In the absence of full autopsies on all cases it is not of much worth to tabulate the various foci of secondary infection. Of the eighteen cases here described, three showed no definite foci. The following conditions were, however, noted: otitis, eight; peritonitis, three; adenitis (sup-

purative), three; arthritis, three; abscesses, two; cellulitis of arm, three; while endocarditis, conjunctivitis, oesophagitis, pleurisy, and numerous other lesions were found. In two of these cases the sepsis antedated the scarlet fever; namely, in a case of empyema and one of puerperal sepsis.

The intensity of the septicæmia is at times wonderful, in evidence of which one remarkable case is worthy of detail. The scarlet fever abated on the fourth day, but sepsis persisted in the throat, and arthritis developed on the eleventh day. On the seventeenth day, painful, brownish-red spots began to appear on the buttocks, cheek, sole of foot, and both thighs. These were extremely tender, and rapidly increased in size: one area took about four hours to increase from a mere pimple to a brownish-blue-red area of three or four inches diameter. Nine hours after the first appearance of the spot on the cheek, the tissue of the cheek was broken down and discharged. Hæmorrhage occurred from the bowel and the child died sixteen hours after the appearance of the first spot. The areas referred to were evidently large hæmorrhages in which disintegration proceeded very rapidly. The bacteriological examination gave pneumococci (perhaps streptococci?).

A most remarkable feature of these cases is the resistance that very young children sometimes offer, a "composite" of eleven children between five months and seven years, giving an average of a child 3·8 years of age, resisting for 19·2 days; no extraordinary cases are here included, the courses varying from thirteen to twenty-seven days. Here we deal with an infection of very different virulence from that of scarlet fever itself; or perhaps we should say, we are dealing with an infection to which either the child has a prepared immunity, or to which it can rapidly make its immunity. Many of these cases I have noted as bettering towards the end of the disease so far as the manifestations of the sepsis are concerned, but being "worn out" by the long continuance of the siege.

The scarlet fever symptoms are here subordinated: the rash was hæmorrhagic in only three, and in one this was just before death, and it was, therefore, probably a true septicæmic manifestation: four times the rash was of maximum intensity, six times moderate, and once slight. Membrane was present in the throat eight times, thrice with Klebs-Löffler bacilli, which, however, did not in these cases seem to be more than an accidental finding, although I add them to the total of cases showing this association. Of the nineteen, six cases had bad mouth and nose, eleven, green stools, eight, vomiting, eight delirium, and the course of temperature averaged from 100° minimum

to 105° maximum, thus showing the wide excursion so familiar in sepsis.

SCARLET FEVER WITH ASSOCIATED DISEASES OR SEQUELÆ

DIPHTHERIA. Scarlet fever and diphtheria are deadly diseases, and the combination is more powerful than the added strength of the two. Three cases referred to under the septicæmic group, bring the total of these to fourteen, although here are set down only the eleven in which the association was considered to be the cause of death or to contribute directly thereto. Of the eleven cases, the average duration of the combined disease was seven days: in one the diphtheria was the first present, and in two the disease developed in the hospital. One of the eleven cases died with laryngeal paralysis, although not from its direct results; four were severe "mouth and nose" cases in which cultures were found in the discharge, cases which, had they escaped this form, would probably still have proved fatal, appearing in the first group. Serum was used in every case, to the extent of an average of 9,200 units each.

Looking at these cases as a whole, it was noticed, with an occasional exception, that the clinical signs of diphtheria did not appear at all, being completely overshadowed by the presence of the signs of scarlet fever. Croup was notably absent, and intubation never necessary. The cultural findings, the use of serum, and the entry of the same on the charts were all. Sometimes one sees a patient in whom an increase of an already high temperature and the increase of general symptoms lead one to think that some new factor has come into the case; in the absence of laryngeal or other definite signs, even when bacilli are found, it is fairly questionable whether one should call the case diphtheria. Thus, some of these eleven cases might more properly be classed with either of the former groups.

MENINGITIS. The other associated condition which has happened in the series was "epidemic" meningitis; this case was a most instructive one. An infant of four months had continuous severe fever and green stools, and on the tenth day developed signs of meningitis; the organism, meningococcus, was isolated, and the baby treated by frequent lumbar punctures and hot baths. On the twenty-first day of illness, the eleventh of meningitis, convulsions appeared for the first time. At this point, I now think, a decompressive operation should have been done. For a few days there were numerous convulsions, then they became less frequent, although the patient would never be free from them for more than a day at a time. Death occurred on the thirty-second day, and autopsy showed that the acute disease had subsided, and hydrocephalus remained.

It not infrequently happens that, in severe cases, meningitis is simulated; there is retraction of the head, stiffness of the muscles of the trunk or limbs, hyperæsthesia, and frequently a rigid resistance on attempting to elicit Kernig's sign, but these are apparently caused by the severe toxæmia,—the state so well described, in connexion with other diseases, as meningismus. As far as autopsy shows, we have had no true secondary meningitis in the series, although such does occur with the otitis media and mastoiditis that are so often found.

Of deaths from sequelæ, the list is a short one. The only death from nephritis was a girl of eleven, who was admitted with convulsions on the twenty-eighth day of the disease. The case was typically uræmic, and died on the following day, post-mortem showing a shrunken kidney which must have been damaged long before the onset of the attack which led to the girl's death. In another, the infection of the mastoid cells led to septic thrombosis of the lateral sinus of that side, and the cavernous sinuses of both sides, with localized inflammation of the meninges of the areas concerned, and of the pituitary body. A third one was tragic in its suddenness: a boy of six ran a course of moderate severity, but with a bad throat; the temperature was low till the twelfth day, when arthritis and a rise of fever suggested sepsis, an idea well borne out by the badly ulcerated throat. The ragged, necrotic appearance of the right tonsil was very striking. This continued, but bettered a little with treatment, and repeated cultures failed to show diphtheria bacilli. A sudden gush of blood from the mouth and nose occurred one day and he died in about a minute. At autopsy, the stomach was full of blood, and rupture of a tonsillar artery had occurred: a way had been literally eaten through it. Yet another case died from what was apparently obstruction of the bowel, not connected in any direct way, as far as we could tell, with the attack of scarlet fever. Finally, one died, aged two, in the scarlet fever which attacked her after a severe burn.

These seventy-one cases thus reduce themselves to forty-eight per cent. of intense scarlet fever; twenty-seven per cent. of secondary septicæmia; fifteen per cent. of diphtheria with scarlet fever; and ten per cent. of various rarer occurrences.

With respect to the treatment of intense scarlet fever, the outlook is a bad one. The stimulant methods that are in vogue are well known. Sponges and packs are good, but not much good, and immersion is no better. Friction to the skin cannot be applied, and, therefore, a "tub," as in typhoid fever, has no place. Intestinal antiseptics and purgation are useful, but, when vomiting is present, are hard to carry out. Cleanliness of the mouth and nose in severely infected cases must be attempted

at all costs, and persisted in. The quantity of fluid is of more importance than the quality, and the best method among many that are used is the one that gets away most secretion: in not a few cases, I know by experience, it is impossible to clean the pharynx. I am in favour of water in the largest quantity that can be taken. In the absence of any knowledge as to the casual agent of scarlet fever there is no specific.

In the secondary septicæmia, anti-streptococcic serum should be given a chance. If the patient can be kept alive long enough to manufacture his own immunity, full feeding should be entered upon as early as possible, regardless of the kidneys. It is the old question of "making a spoon or spoiling a horn." If a vaccine can be prepared sufficiently soon from the patient's own infective agent, it may be of use, but it has not yet been done, so far as I know. We have attempted blood cultures lately in all the severe cases, in the hope of finding an organism from which we might prepare a vaccine; but some eight or ten cases so far tried have yielded no cultures.

There are one or two important practical points worthy of note in the handling of septicæmic cases, the first of which is of importance for those who have to deal with institutions. We have twice observed these cases occurring in groups, and on both occasions in wards that were "overworked," that is, that had not been disinfected for a comparatively long period. There is no doubt that a ward may become infected from these cases, just as happens with erysipelas, or in other septic diseases of the same sort. It must be admitted that once or twice moderately septic cases became intensely septic under these circumstances, and taught us that systematic house-cleaning was not a matter merely of expediency. Another very important point is the surgical treatment of adenitis of a very marked degree. The question presents itself, when should the submaxillary groups of glands be incised? Experience has considerably modified my own views on this matter, and at the present time I have them opened much less frequently than before. It is simply remarkable how frequently one is certain that glands are fluctuant and suppurative, and how often incision will show that there is no pus in them. There is probably little disadvantage in opening the glands, because there is always considerable serous drainage, but the wounds are troublesome and require frequent dressing, and no healing goes on during the course of the disease. This applies to a mass of glands which can be felt circumscribed under comparatively lax skin. When, however, the skin becomes brawny, and there is evidence of cellulitis, they are better opened even if no pus exists. The glands, if left, may cause a spreading

cellulitis, which may even go into the arm, and I have known the sterno-clavicular bursa infected in such a case. It is worth remembering that even when one is the surest that the glands are suppurative, the chances are that he is mistaken.

One or two interesting points may be mentioned in prognosis. Scarlet fever affects the alimentary tract so little that a severe disturbance of it, evidenced by vomiting and foul green stools, seems a bad omen. The fatal cases nearly all show such disturbance, and the non-fatal cases scarcely ever, and there seems here a distinct line of demarcation. Formerly I was inclined to consider that the fact that a patient took his fluids well was a good point, but I doubt if this is of any importance, because in this series I find about an equal number taking their food and refusing it, and the same patient refusing it yesterday and taking it to-day. At least one may say that the patient who takes fluid freely washes the pharynx better than he who does not.

Finally, it seems as if many severe cases of scarlet fever are fated from the first to die; but it is a comforting reflection with which to end the consideration of so many fatal cases that ten intensely ill patients, whose lives did not appear worth purchase, left the hospital well.

PROTOCOL OF FATAL CASES

INTENSE SCARLET FEVER

1. 185-08. Male, 3; duration, 8 days; muco-purulent discharge from mouth and nose. No autopsy.

2. 133-08. Male, 6½; 4 days; severe adenitis. No autopsy.

3. 463-08. Male, 7; 5 days; delirium; chills; cyanosis. No autopsy.

4. 452-08. Male, 4; 4 days, rash slight, delirium; membrane on throat. No autopsy.

5. 451-08. Female, 9; sister of preceding case; of four children attacked at same time, three died; 7 days; rash slight; muco-purulent discharge from mouth and nose. No autopsy.

6. 382-08. Female, 3½; 3 days; rash slight; vomiting and frequent green stools. No autopsy.

7. 212-08. Male, 2½; 3 days; convulsions; vomiting; green stools. No autopsy.

8. 30-08. Male, 1 year and 10 months; 6 days; severe infection of mouth and nose; green stools. No autopsy.

9. 6-08. Male, 2 years and 3 months; 5 days; vomiting and diarrhoea with green stools; cyanosis. No autopsy.

10. 386-07. Male, 5; 8 days; rash moderate but hæmorrhagic; delirium and coma; severe infection of mouth; cyanosis. No autopsy.

11. 328b-07. Female, 33; 6 days; intense rash; severe throat infection; reduction of urine. Autopsy—Fatty degeneration of heart muscle, an enlarged spleen, and acute parenchymatous nephritis.

12. 267-07. Male, 7; 6 days; rash extreme; hæmorrhagic; severe infection of mouth with adenitis; tremors; coma; green stools. No autopsy.

13. 14a-07. Male, 19; 4 days; rash extreme, hæmorrhagic; vomiting; diarrhoea. Autopsy—Cloudy swelling of heart muscle and liver; hæmorrhages in heart muscle; acute parenchymatous nephritis; gastro-entero-colitis with submucosal hæmorrhages. These findings indicate, for the most part, an intense toxæmia.

14. 226-07. Male, 21; 3 days; rash extreme, hæmorrhagic; vomiting. No autopsy.

15. 531-09. Male, 6; 9 days; rash extreme; vomiting; severe infection of mouth and nose; bronchitis, and terminal broncho-pneumonia. No autopsy.

16. 213-09. Male, 2; 8 days; rash extreme, hæmorrhagic; vomiting; severe infection of mouth and nose; unyielding high fever. Autopsy—Necrosis of tonsils and pharyngeal structures, with laryngitis, tracheitis and a pneumonia of short duration; petechial hæmorrhages of the peritoneum and the bladder, and the familiar cloudy swelling of heart, liver, and kidneys were present; in the aorta, an cedematous looking raised patch 2.5 by .5 cm. indicated some change in the artery coats. In the kidneys some collections of inflammatory cells were seen in the vicinity of glomeruli, though not in the glomeruli themselves. Streptococci were cultivated from the heart blood.

17. 311-09. Male, 2; 9 days; rash slight; membrane on throat; severe infection of mouth and nose; diarrhoea with green stools; finally, lobular pneumonia. Autopsy—Bronchitis and bilateral pneumonia; fatty degeneration of the liver, with focal necrosis and a diffuse hepatitis; enlarged spleen and acute parenchymatous nephritis; the heart blood yielded staphylococcus.

18. 247-09. Female, 2½; 11 days; membrane on throat; severe infection of mouth and nose; vomiting and diarrhoea with green stools; tremors; fever at one time rose to 107.8°, and before death was 110°. Autopsy—Acute ulcerative pharyngitis and laryngitis; acute hepatitis; acute parenchymatous nephritis; enlarged spleen; intramuscular hæmorrhages; suppurative otitis media; cloudy swelling of heart muscle.

19. 253-09. Female, 11; 7 days; furious delirium, attempting to bite, etc.; vomiting.

20. 257-09. Female, 1; 5 days; rash of moderate intensity,

hæmorrhagic; severe infection of nose; diarrhoea with green stools. Autopsy—Acute bronchitis; cloudy swelling and fatty degeneration of liver; cedema of pia, and congestion of brain. Streptococci were found in smears of the heart blood, confirmed by culture.

21. 275-09. Female, 9; 4 days; rash moderate, hæmorrhagic; vomiting; delirium. Autopsy—Cloudy swelling of heart, liver, and kidneys; acute laryngitis and bronchitis; petechial hæmorrhages of skin, pleura, and intestines; early arterial change. No cultures could be grown from the heart blood.

22. 161-09. Female, 8; 7 days; extreme rash, hæmorrhagic; severe nasal infection; delirium. No autopsy.

23. 183-09. Male, 37; 5 days; extreme rash, hæmorrhagic; spleen palpable; terminal broncho-pneumonia. Autopsy—Bilateral lobular pneumonia; pleurisy; membranous tracheitis and bronchitis with fibrin casts of bronchi, (streptococci; no Klebs-Lœffler Bacilli); petechial hæmorrhages; enlarged spleen; early verrucose mitral endocarditis; cloudy swelling of heart and kidney; acute hepatitis. The findings of this case are somewhat those of a secondary infection, but for clinical reasons the case is included in this series.

24. 52-09. Female, 29; 8 days; rash slight but hæmorrhagic; mouth dry and bleeding; delirium; stools green. No autopsy.

25. 533-09. Female, 10; probably 6 days; rash intense; hæmorrhagic; delirium; vomiting; green stools. Autopsy—Tonsillitis with necrosis; acute bronchitis; petechial hæmorrhages of skin and various organs; enlarged spleen; cloudy swelling of liver and kidneys; heart blood in smears gave doubtful cocci, which could not be verified by culture.

26. 359-09. Female, 34; 10 days; rash slight; membrane in throat; delirium; green stools. Autopsy—Cloudy swelling and fatty infiltration of heart; acute hepatitis with focal necrosis; petechial hæmorrhages; acute glomerulo-nephritis. There were certain other inflammatory conditions, but the appearances were rather of a toxæmic than a septicæmic case.

27. 356-09. Female, 1 year and 11 months; 9 days; rash slight; vomiting and green stools. Autopsy—Acute parenchymatous (hæmorrhagic) nephritis; hyperplasia of lymphoid structures.

28. 259-07. Female, 11; 6 days; rash moderate, finally hæmorrhagic; delirium; severe infection of mouth and nose. No autopsy.

29. 634-09. Female, 15 months; 10 days; rash moderate, hæmorrhagic; continued high fever; vomiting; diarrhoea with green stools; severe infection of mouth and nose; otitis; broncho-pneumonia.

Autopsy—Bilateral lobular pneumonia; bilateral otitis media; fatty degeneration of liver.

30. 648-09. Female, 3; 4 days; high, unyielding fever; twitching; profuse nasal discharge; diarrhoea with green stools; vomiting. Autopsy—Acute laryngitis and tracheitis; fatty degeneration of liver and kidneys.

31. 636-09. Male, 6; 6 days; rash extreme, hæmorrhagic; delirium; severe infection of nose and throat; stools green. Autopsy—Acute pleuritis; old pericardial adhesions.

32. Extern. Female, 14; 5 days; rash extreme, hæmorrhagic; delirium and coma. No autopsy.

33. Extern. Male, 4; 6 days; rash extreme; delirium; meningismus; severe mouth and nose infection, membrane. No autopsy.

SCARLET FEVER WITH SEPTICÆMIA

1. 169-08. Female, 9; duration, 18 days; tonsillitis with membrane; arthritis, multiple; hæmorrhages in subcutaneous tissues with necrosis, with great pain and tenderness of these areas. Autopsy—Acute verrucose aortic and mitral endocarditis; myocarditis with fatty degeneration; infarcts of spleen and kidneys. Heart blood, heart valves, and liver gave pneumococcus (streptococcus?).

2. 154-08. Male, 5; 20 days; moderate rash; severe infection of mouth and nose; vomiting; stools green, finally bloody; delirium; otitis media, adenitis, and multiple arthritis. No autopsy.

3. 155-08. Male, 7; 16 days; delirium and coma; vomiting; green stools; severe infection of mouth and nose. No autopsy.

4. 123-08. Male, 6; 16 days; severe infection of mouth and nose; vomiting; green stools; otitis media; broncho-pneumonia. No autopsy.

5. 440-08. Female, 27; 21 days; puerperal; rash slight; original course of 12 days with descent almost to normal temperature, then re-ascent; no corresponding signs of infection in pelvis. No autopsy.

6. 330-08. Male, 8; 65 days; rash extreme; delirium early in course; Klebs-Loeffler bacilli in throat at one period; ninth day of disease, peritonitis, (*B. coli*); laparotomy; two weeks of vomiting; diarrhoea, and lack of sleep; great emaciation. This was followed by an asthenic period till death. Autopsy—General peritonitis from perforation of ileum; multiple ulcers of ileum; gastro-enteritis; parenchymatous nephritis; pneumonia and lung abscess; fatty degeneration of organs.

7. 66-09. Female, 5; 8 days; empyema with operation before

scarlet fever; otitis media; abscess of concha; increased discharge from wound. No autopsy.

8. 333-09. Female, 1 year 3 month; 18 days; rash slight; severe infection of mouth and nose; green stools; otitis media and adenitis.

9. 305-09. Female, 1; 22 days; had some illness of lungs a month before; rash moderate; green stools; severe infection of mouth; adenitis, suppurative, with incisions. No autopsy.

10. 212-09. Male, 4; 15 days; rash extreme, hæmorrhagic; delirium; vomiting; diarrhoea with green stools; severe infection of mouth and nose; otitis media; adenitis. Autopsy—Broncho-pneumonia; petechial hæmorrhages of pleura, pericardium, and intestines; enlarged spleen; acute interstitial nephritis.

11. 402-09. Male, 2; 13 days; rash extreme; mouth and nose severely infected; membrane in throat; vomiting; diarrhoea with green stools; suppurative adenitis incised; otitis media. Autopsy—Bronchitis; enlarged spleen; extreme hepatitis; acute hæmorrhagic nephritis. The kidneys were almost pulpy and in places sections could scarcely be recognized as kidney, so great was the infiltration of inflammatory cells.

12. 518-08. Female, 4½; 21 days; rash moderate, later hæmorrhagic; delirium; diarrhoea with green stools; otitis, arthritis; cellulitis of hand and scalp; cardiac dilatation. The original course of twelve days with gradually falling fever was replaced by a rapid exacerbation. Autopsy—Tonsillitis with necrosis; bronchitis; broncho-pneumonia; abscess of lung; enlarged spleen; intramuscular hæmorrhages of heart; cloudy swelling of heart and liver; acute parenchymatous nephritis; oedema of pia. Streptococci were recovered from the areas of cellulitis in the hand.

13. 465-09. Male, 6; 17 days; moderate rash; severe infection of mouth and nose; suppurative conjunctivitis; otitis; some obscure abdominal complication, perhaps peritonitis; vomiting; cardiac dilatation. No autopsy.

14. 585-09. Female, 45; 19 days; rash extreme, hæmorrhagic; palpable spleen; vomiting; green stools; tympanites; otitis media; adenitis with incisions. Autopsy—Otitis media; suppurative adenitis; acute nephritis; fatty degeneration of liver.

15. 63-09. Female, 7; 19 days; admitted with scarlet fever and diphtheria; rash moderate; acute endocarditis; peritonitis; severe infection of mouth; adenitis with incisions. Autopsy—Acute verrucose endocarditis; ulceration of tongue and oesophagus; petechial hæmorrhages of organ; acute hæmorrhagic glomerulo-nephritis; septic infarcts of kidney. The heart blood gave pure culture of streptococcus;

the peritoneum *b. coli*; the heart valves gave staphylococcus, *b. coli* communior, and a Gram positive diphtheria-like bacillus.

16. 355-09. Male, 1 year and 9 months; 25 days; rash moderate; diarrhoea with green stools; otitis media; adenitis; abscesses of scalp and arm. Autopsy—Acute bronchitis; cloudy swelling of heart muscle; enlarged spleen; acute hepatitis with focal necrosis; recent localized peritonitis; acute parenchymatous nephritis; oedema of lung, pharynx, and kidneys. The heart blood gave streptococci.

17. 426-09. Female, 5 months; 14 days; admitted desquamating; otitis media; cellulitis of arm; diarrhoea with green stools. No autopsy.

18. 307-07. Female, 1 year and 7 months; 108 days; original course eight days; then seventeen days of normal temperature; then eight weeks of septic fever; then fourteen days of low or normal temperature; finally, ten days of fever; Klebs-Löffler bacilli at death. The long course of secondary fever was partly due to pleurisy and diffuse bronchitis. Autopsy—Diphtheria and broncho-pneumonia; signs of recent pleurisy; heart blood and internal organs gave no growths.

19. 613-09. Male, 6; 14 days; rash extreme; delirium; severe mouth infection; diarrhoea with green stools; adenitis marked; spread to cellulitis of left shoulder and left arm, also left sterno-clavicular bursa; 80 c.c. of antistreptococcic serum given in the course of the disease. No autopsy.

SCARLET FEVER WITH SEQUELÆ OR ASSOCIATED DISEASE

1. Nephritis. 295.08. Female, 11; 29 days; admitted on twenty-eighth day with uræmic convulsions, subnormal temperature; no suppression of urine. Autopsy—Chronic interstitial nephritis; anasarca; hydrothorax; focal necrosis of liver. The renal lesions were evidently older than could be produced by the present attack of scarlet fever.

2. Hæmorrhage from Necrosis of Tonsil. Male, 6; 20 days; severe infection of mouth and nose; necrosis of right tonsil; adenitis; arthritis; erosion of branch of tonsillar artery; sudden death from hæmorrhage. Autopsy—Necrosis of tonsil and pharynx; fatty degeneration of heart and liver.

3. Cerebral Thrombosis from Mastoiditis. 262.08. Female, 6; 38 days; rash moderate; delirium; otitis media; mastoiditis; operation twelfth day; thirtieth day onset of symptoms resembling meningitis. Autopsy—Acute bilateral suppurative otitis media and mastoiditis; osteitis of petrous bone and body of sphenoid; radical mastoid operation; acute localized meningitis; septic thrombosis of right lateral

and both cavernous sinuses; acute hypophysitis; acute inflammation of right Gasserian ganglion.

4. Epidemic Cerebro-spinal Meningitis. 225.08. Male, 4 months; moderate course of scarlet fever; meningitis tenth day; meningococcus isolated; fourteen lumbar punctures in twenty days; convulsions twenty-first and subsequently; death, thirty-second day. Autopsy.—Marked internal hydrocephalus, with great regression of the inflammatory process in the meninges.

5. Burn of Surface. 168.08. Female, 2; 9 days; signs of scarlet fever not severe; death, five hours after cardiac collapse. No autopsy.

6. Obstruction of the Bowel. 382.08. Female, 3; 24 days; a slight course for three weeks; fever not down to normal; abdominal signs. (Notes defective.) No autopsy.

"THE conclusion drawn from the study of teratoma testis would seem to have important bearing on the origin of tumours in general. It seems very unlikely that the conditions surrounding the genesis of this group of tumours are wholly different from those prevailing with tumours in other organs, notwithstanding the fact that in the testis one has to deal with totipotent sex cells not occurring elsewhere. In the testis one encounters a wide variety of neoplasms, from the most undifferentiated, diffusely growing, highly malignant, round cell tumours, up to fully adult and harmless tissues and organs, all of which appear to have one and the same origin, the slow or rapid unfolding of original potencies of sex cells. These facts seem to the writer wholly irreconcilable with any relation to an external parasite, but reveal in a striking manner that most important of all facts known about the origin of neoplasms, that embryonal cells possess more than any others the essential factors in the inception of tumours."—*Surgery, Gynaecology, and Obstetrics*.

THE RELATION OF THE THYROID GLAND TO THE FEMALE GENERATIVE ORGANS

BY JAMES R. GOODALL, B.A., M.D.

Assistant Gynæcologist and Gynæcological Pathologist to the Royal Victoria Hospital; Demonstrator in Gynæcology, McGill University

AND L. C. CONN, M.D., C.M.

Resident Gynæcologist, Royal Victoria Hospital, Montreal

IN June, 1909, Mrs. P., aged sixty-nine, came to the out-patient department of the Royal Victoria Hospital, complaining of "pelvic trouble."

She was a tall, slender woman, who looked quite her age. She was extremely nervous and, while relating her history, showed constantly changing patches of erythema, due to vasomotor instability. She stated that she was a married woman and the mother of five living children. She had had two miscarriages antedating her last full-term child. Menopause came on at forty-seven years and had been complete. She had never suffered from any chronic trouble or pelvic disease until within the last two years. Her labours had been easy and recoveries rapid. Two years previous to the date when she came to hospital, she began to suffer from a dull, aching pain felt in both lower quadrants. The pain was well localized to the hypogastric region, but at times it would take on an acute exacerbation, and would extend to involve the whole abdomen and spread down the thighs. She had lost a great deal in weight, especially during the last six months. Concomitant with, or shortly after, the onset of the pelvic trouble, she noticed that her neck began to enlarge, and she states that it had continued to increase its dimension slowly since then. For the past six months she had suffered a great deal from dyspnoea. During the attacks of general weakness, which came on frequently, the dyspnoea became very troublesome and the patient could not undergo any exertion. Latterly, dysphagia had been added to the symptoms, and during the last month she had taken nothing solid, owing to the discomfort it occasioned. She had grown very weak and could not get about to do her housework.

PHYSICAL EXAMINATION: Omitting all the other systems, about which there was nothing very striking, we shall devote our attention to the pelvis, chest, and thyroid gland.

The thyroid gland was enlarged, uniformly, to nearly the size of an ordinary coconut. It rose quite high into the neck, and sank into the chest to a considerable depth. It was at this point of contact with the sternum that it seemed to be causing pressure symptoms, for it was almost immovably fixed between the spinal column behind and the sternum in front. There was but little movement imparted by the act of deglutition. There were no differences in consistence detected in palpating the tumour; it was fairly hard and presented a smooth uniform, anterior surface.

The glands of the neck were not palpable. The jugular and other cervical veins were widely dilated. The neck above the tumour was pale, that below was of a dusky red, due to widely dilated venules. The line of demarcation between these two areas was sharply drawn. It closely resembled the necklace sometimes worn by Indians; namely, a string loosely hanging about the neck from which myriad beaded strings depended. Examination of the larynx, by Dr. William Jamieson, revealed deviation and compression of the trachea.

The lungs gave evidence of only diminished breath sounds over the whole chest, which was attributed to the diminished respiratory activity due to compression of the trachea. The cardiac condition caused no little anxiety when later it came to a question of operation. She had a dilated, irregular heart, and all the signs of chronic myocarditis secondary to valvular disease of the mitral valve. The pulse was always rapid, and she had great vasomotor instability.

There was an ill-defined mass, palpable over the hypogastrium, deep down in the pelvis. Upon bimanual examination, the uterus was found pushed far forward and solidly fixed. The Douglas pouch was filled by a hard, nodular mass, which, by its contour and position, was definitely intraperitoneal, and there were hard, nodular masses palpable in the fornices also. The vagina was markedly fusiform owing to senile vaginitis,—a condition which always makes the bimanual examination very difficult and unsatisfactory.

Such was the history and the condition of the case, which resolved itself into a question of diagnosis. The cervical tumour and the cardiac disease left no question as to their character. But what was the pelvic disease? This was a question which we could not answer. From the woman's age, from the length of time which had elapsed since menopause, from the lack of any signs whatsoever of Neisser infection about the vulva, we brought the diagnosis down to two possible conditions,—senile salpingitis, or malignant disease of the appendages. After exhausting all means to eliminate one of these, diagnosis was impossible; therefore it was resolved that, though the neck tumour would eventually

demand operative interference, yet, if this did not interfere with ether administration and if the cardiac condition would permit, it would be advisable to operate upon the pelvis first, ascertain its character, and be guided as to the subsequent steps by the character of the disease of the generative organs. Accordingly, the patient was kept in bed for one week to rest the heart and promote the general health.

When the abdomen was opened the disease proved to be chronic, pelvic tuberculosis. The tubes were widely dilated with pus and the ovaries were riddled with small abscesses. The adhesions were very dense, and one pus tube communicated with the bowel lumen in two places. The uterus and appendages were removed, and the bowel sewed up with a double layer of Lembert sutures. The abdominal cavity was drained per vaginam.

The patient made, not an uninterrupted, but a fairly good recovery. Ten days after operation, she developed quite a high temperature with pain over the abdominal incision. The stitches were at once removed and a quantity of foul pus escaped. The aponeurosis held solidly, and, when the surfaces had granulated, the skin was brought together again under gas anaesthesia and union was complete.

Our attention was drawn to the thyroid gland on the twelfth day. It was appreciably smaller. From that time on the symptoms disappeared and the diminution was steady and slow. When the patient left the hospital there was no trace of thyroid gland visible. About the thirtieth day it had reached about normal size, but a still greater reduction took place. It is our impression that she may later suffer from athyrea. Be that as it may, six months after operation she was remarkably well. She developed a considerable bronzing of the skin, which at once made one think of a possible adrenal tuberculosis, but it turned out to be only the pigmentation which so frequently supervenes upon total removal of the sexual organs.

Such is the history of this remarkable case. The thyroid gland had enlarged synchronously with the onset and progress of a grave disease of the generative organs, and with the removal of the pelvic disease the goitre visibly diminished to dimensions below the normal. There can be no doubt that here we have to deal with two diseases which stand to each other in the relation of cause and effect. In which relation do they stand? About this there can also be no doubt. The thyroid enlargement came on insidiously after the pelvic trouble began, and the removal of the inflammatory focus in the pelvis caused a spontaneous absorption of the excess thyroid. There can be no hesitation, then, in claiming that the pelvic disease was the cause and the thyroid enlargement the effect.

But another question follows closely upon the answer to the former. Which of the pelvic organs is responsible for this action upon the thyroid? To this important question, nothing but a tentative answer can be given. To most men the answer will readily come,—that it is due to the ovaries. But if you ask, Why? the question becomes a very difficult one.

In the hope of finding analogous cases, we have searched the literature as far back as 1884, without finding anything that even remotely borders upon our case. But certain known facts lead us to assume that the ovaries are the governing, or exciting, factor in this hypertrophy of the thyroid. Of recent years, as if stimulated by the monograph of Freund, and by the brilliant results obtained by thyroid therapy, a great deal has appeared in literature bearing upon this relation of the thyroid gland with the genitals. But far back in the history of medicine, the variation in the size of the neck coincident with changes, either physiological or perverted, in certain sexual functions, was well recognized and frequently written about. It is a fact beyond all question that changes in sexual function and activity elicit or demand change in thyroid activity.

To facilitate the exposition of this relation of these two systems, namely, the genital on the one hand, and the ductless glands, and, in particular, the thyroid, on the other, we have deemed it advisable to deal with the subject under two headings: (1) The influence of the thyroid function upon the genital system; (2) The influence of the genital functions upon the thyroid activity.

To draw a neutral line between these two divisions of our subject is quite impossible; to wish to establish in each given case the cause and effect is to wish to step beyond what is known of these organs, which are at the present day the subject of so much investigation. There is no system in medicine about which so little is known as that of the ductless glands. There is no system about which there is so much that is speculative, and so little that is really beyond the stage of theory. By analogy, and by all means of deductive knowledge, we have come to speak of the internal secretion of these glands as if it were a well proven, thoroughly isolated, and chemically analyzed humour. Yet when we separate the theoretical from the truly tangible, we find the tangible *non est*. In spite of this, it will be well to approach the subject under the headings as outlined above, knowing that the two may overlap at many points.

Before proceeding to the discussion of the subject in detail, we must first inquire into the significance of menstruation and its relation to ovulation. Pinard and others look upon the menstrual flow as the

outward sign of ovulation, and from this they deduce conclusions which are entirely erroneous if the premise is false. Moreover, he has many other authors who agree with him implicitly. He writes of the frequency of incidence of pregnancy during the amenorrhœa of lactation, but does not offer an explanation of this phenomenon.

We feel that the relation between ovulation and menstruation is a very loose one. Let us inquire into the relationship more closely. What is it that causes the periodic congestion? To this a positive answer can be given. It is an ovarian function. To be more definite, it is the development of a Graafian follicle. It is the monthly discharge of ovarian function, which is ovulation. Now menstruation is related to ovulation only in this, that the *healthy, developed uterus* at that time will develop a pseudo-decidua preparatory to receiving the fecundated ovum, and if impregnation does not take place, the uterine mucosa, under the influence of the pelvic congestion, will bleed by a process of diapedesis or rhexis. If impregnation takes place some time before pelvic congestion has reached its height menstruation will not occur. But, if impregnation takes place *immediately* before the height of pelvic congestion, menstruation will occur, though modified by the time which has elapsed between the fecundation and the menstruation which should not have occurred.

By this we wish to prove that uterine hæmorrhage is but a factor in the reproductive cycle, but it is a factor of a more or less passive nature, and we would go still further and state that uterine hæmorrhage is but an index of retrogressive changes in a special decidual tissue developed for a special cause. When the pregnant ovum does not become implanted upon the specially prepared bed retrogressive changes ensue, and the decidual tissue and hypertrophied mucosa must return to the quiescent, intermenstrual state. This retrogressive change is first evidenced by a soddening of the tissues with lymph, weakening of the arterial walls by cedema, and, finally, the vessel walls rupture under the pressure of the blood stream and uterine hæmorrhage ensues.

It will be seen that the uterus is more or less passive. The active agent is the ovary, with its function of ovulation. This function brings about pelvic congestion, and the uterus takes part in the menstrual congestion. Therefore, lack of ovulation will mean lack of menstruation, because lack of ovulation implies lack of pelvic congestion. But the converse is not necessarily true, that lack of menstruation means lack of pelvic congestion and lack of ovulation. For example, it has been the experience of every general practitioner to have had cases where impregnation took place during the amenorrhœa of lactation. Many cases are also on record of pregnancy before puberty, and of preg-

nancy after menopause. It is a well-known fact that ovulation goes on regularly in children long before puberty. Our sections show that ovulation goes on regularly in infants, yet they do not menstruate. We stated above that normal menstruation is but the index of the influence of pelvic congestion, i.e., ovulation upon a *healthy, developed uterus*, in a healthy individual. If the uterus is infantile, or undersized, it will not menstruate, or will menstruate irregularly and scantily, and this irregularity is due not to changes in the uterus, which allows it to menstruate some months, and not at others, but the irregularity is due to fluctuations in the degree of pelvic congestion. The absence of menstruation under such circumstances does not mean the absence of the chain of uterine changes which are coincident with pelvic congestion. It means the presence of all these, but in a minor degree, and to a degree that does not permit of rupture of the blood vessels and hæmorrhage, and necessarily the quantity will be small. On the other hand, where the uterus or its mucosa is diseased, where the mucosa is thickened and hypertrophic, the degree of change at the menstrual epoch will be greater,—the mucosa will be thicker, the vessels will be more numerous, and the quantity of blood lost will be greater.

Hence normal uterine hæmorrhage is the index of a normally developed, normally functioning, healthy uterus and uterine mucosa. We are convinced that ovulation and pelvic congestion go on regularly every month from infancy to menopause, and frequently beyond, without interruption, and that uterine hæmorrhage is but a sequence, though not a necessary sequence, and will depend for its absence or for its presence, for its regularity and for its irregularity, for its scantiness and for its excess, upon conditions quite apart from *ovulation*. These determining conditions may be uterine or extra-uterine, and we need not stop to inquire into these. Our readers will note that we did not state that "the character of the menstrual flow will depend upon conditions quite apart from *ovulation and pelvic congestion*," but we did state that the character will depend upon conditions quite apart from *ovulation*. It will be readily seen that the character of the pelvic congestion will be quite independent of ovulation—the cause which provoked it. Many factors may enter to increase or decrease the determination of blood to the pelvis. But these are independent of ovulation, and may best be spoken of as complications. Such, for example, are pelvic inflammations, ectopic gestation, cardiac disease, and new growths.

From the foregoing it will be seen what a very fluctuating sign menstruation really is; how it is acted upon by so many extrinsic causes, not only as to its periodic regularity, but also as to its quality. Its vasomotor system seems to be no less under the dominance of the higher

nervous centres than is the vasomotor system of other organs. The vasomotor changes which find their expression in spells of fainting which follow upon great mental shocks, find their analogue in the amenorrhœa in great nervous shocks. Moreover, it has been the experience of every gynæcologist and obstetrician to find the recurring pains of menstrual dysmenorrhœa of young girls cease suddenly for a while when the physician enters, and the same expression of nervous influence is seen in the cessation of uterine labour pains when the accoucheur arrives.

From this it must follow that changes in menstruation as to regularity and quantity must be interpreted with the greatest care, especially in a work of this nature in which we wish to bring two systems into close relation, and endeavour to trace a cause in the one system, if such there be, to explain an effect in the other.

THE INFLUENCE OF THE THYROID UPON THE GENITAL SYSTEM: Of perversions of the thyroid activity we recognize two well defined types: excessive thyroid secretion, of which we have the classical type in exophthalmic goitre, and defective thyroid secretion, as the type of which we recognize myxœdema. But it is not these pronounced cases which are of the greatest clinical interest. There is absolutely no reason why cases should conform closely to these two types to fall into these same categories. The French schools were early in recognizing the larval stages of these two diseases, which Charcot speaks of as "*les formes frustes*." Just as the classical cases of these two types are easy to diagnose, so are the larval types correspondingly difficult of recognition. Yet it is just in these cases that brilliant therapeutic results can be expected. Thyroid secretion has been known for ages to exercise a profound influence over the female genitals. Long before Freund's monograph, folklore associated the two, but it was reserved to Freund to crystallize the subject. Since then a great advance has been made in the therapy of these diseases by the use of thyroid gland extract, so that a great increase in our knowledge has taken place.

In view of this assistance due to thyroid therapy, which finds its most brilliant results in cases of hypothyroidism, we have deemed it proper to begin with, *the influence of diminished thyroid secretion upon the genital system.*

Perhaps the most striking example of this relation is found in cretinism. Cretins, who live to reach the age of adolescence, invariably suffer in the development of their sexual organs. The external genitalia remain infantile and the uterus remains small and undeveloped. Sexual appetite is nearly always absent and procreation is an impossibility.

But a more interesting symptomatology obtains in cases of myxœ-

dema. Myxœdema is much more common in women than in men. The ratio is as seven to one, respectively. Yet the great age for its development is between thirty-five and fifty. In cases of myxœdema, beginning at this age, the sexual organs are fully developed before the onset of symptoms of hypothyroidism and any changes which supervene may be directly attributed to the defective thyroid secretion. In one case reported by Bramwell menstruation was undisturbed. In others the menstrual flow was greatly increased, leading to grave anæmia. Under thyroid treatment the unnatural hæmorrhages returned to the normal flow.

But by far the most common symptom is amenorrhœa. It is a fact beyond refutation that in the cases of menorrhagia, associated with slighter grades of myxœdema, there is always a cause other than hypothyroidism to account for the excessive hæmorrhage. The association of perverted calcium metabolism with thyroid perversion is well known. If we examine carefully in these cases of menorrhagia we find a great diminution of coagulability of the blood, and the administration of small doses of calcium lactate often effects a speedy cessation of this symptom. In spite of this, the hypothyroidism goes on, and the diminution in the calcium content will shortly make itself felt again in the renewal of the unnatural hæmorrhages. Under such circumstances the administration of both calcium and thyroid will effect a return to the normal provided the pelvic organs are healthy. Amenorrhœa is by far the most common pelvic symptom, and it is a well established fact that once myxœdema is established pregnancy seldom supervenes. Moreover, cases of amenorrhœa in myxœdema soon recover their normal menstrual flow with a subsidence of the symptoms of the primary disease.

But, as stated above, it is not in the pronounced myxœdematous cases that we find the most interesting results. Some of our clinical experiences are infinitely more instructive. Let us revert to these.

In 1905, Mary H. came under observation in the out-patient department of the Royal Victoria Hospital. She was eighteen years of age, short, stout, and plethoric. Her voice was distinctly nasal and harsh; she had large tonsils and adenoids, and her hearing was impaired. She presented a drowsy appearance, accentuated by heavy eyelids. She came complaining of amenorrhœa. She had menstruated regularly for six months between her fourteenth and fifteenth year, but since then only about once in a year, usually during the warm months. Physical examination revealed nothing striking. The hymen was intact, but the aperture was large enough to admit the finger. The uterus was normal in size and the pelvis healthy. The thyroid gland could

not be felt. She suffered much from constipation. She was given ovarian extract and pill Blaud, which she continued to take for a very long time without any appreciable change, except that the flushes and headaches which appeared monthly, were greatly increased in severity. She disappeared for two years. Upon her return she again complained of the amenorrhœa, which still persisted. She was given small doses of thyroid extract (two grains t.i.d.), and her menstruation came on one month later and has been regular since that time. She returned regularly for six months for the renewal of her prescription. She then remained away for seven months and came complaining of pelvic pain. The sexual appetite must have become overpowering for she had substituted a gonorrhœal double salpingo-oophoritis for her amenorrhœa.

About one year ago, Alphonsine D. came complaining of epileptic fits, which came on regularly every month. She stated that she had long periods of amenorrhœa, and that when she should have her menstruation she had all the molimina very pronounced,—headache, flushes, congestion of face and head, swollen hands, and restlessness. This would last about two days and culminate in an epileptic seizure. At other times she would experience all the foregoing symptoms, but menstruation would come on, though scanty, and the epileptic seizure would be absent. Her condition was pitiable in the extreme. She lived in constant dread of the monthly attacks, and she begged that something might be done for her. She had menstruated regularly for a very short time. She had taken so much bromides that she was dull and heavy and covered with the rash of bromism. Nothing abnormal was found on examination so far as the pelvis was concerned. The thyroid showed no appreciable change. The skin and subcutaneous tissues seemed normal; but mentation was slow and speech equally so; she was somnolent and very apathetic except when spoken to, when she would rouse herself. She was given small doses of thyroid and general tonic treatment. The change was astounding. Within six weeks menstruation returned, and that patient is one of the happiest and most grateful.

A short time afterwards a similar case came to the clinic. There were "epileptic attacks," which made their appearance every month in a young girl who suffered from intermittent amenorrhœa. The pelvis was healthy. She was at once referred to the clinic for nervous diseases, and Dr. C. K. Russell examined the case thoroughly. It was a parallel case, with a great improvement in her symptoms, though she occasionally has a seizure.

Five months ago a very stout, young Jewess came under observation. She weighed two hundred and ten pounds, was very flabby

and pale, had a voracious appetite, which she gratified upon every occasion, and suffered from symptoms of hyperacidity. Her chief complaint was menorrhagia. She would bleed for twelve days in very large quantities, and for the last three months she had never been free from hæmorrhage. She had been curetted three times by a special surgeon. She had been married seven years, and had had no pregnancies. She was stout when she married, weighed one hundred and eighty pounds then, but has steadily gained since. Her menstruation was always copious. She was put upon thyroid extract, three grains after meals, and calcium lactate. She at once began to lose weight and hæmorrhage ceased. The next menstruation, which came on two weeks after treatment was begun, lasted only eight days and was much less in amount. She lost thirty pounds in the next three months, and menstruation has been less in amount than at any time in her sexual life.

We have at the present time two cases of larval thyroid deficiency, and quote both cases, inasmuch as their menstrual histories are so opposite. One was a woman of forty-five years, mother of seven children. She came to the Royal Victoria Hospital about four months ago, complaining of metrorrhagia. She had a mass the size of an orange in the right fornix and a large, tender uterus. She was very pale, had bled a very great deal, and the vagina had been packed several times before coming to the hospital. The diagnosis of ectopic gestation was made, but she was not in a fit state to undergo an abdominal section. So, in view of the fact that the uterine hæmorrhage was quite uncontrollable, the uterus was gently curetted and packed with gauze. The hæmorrhage ceased immediately. She was told that laparotomy would be necessary at a later date, but the mass diminished quickly in the course of the next two weeks and she refused operation. A short time ago she returned complaining of such severe hæmorrhage at menstruation that she feared she would die. The blood examination gave sixty per cent. of hæmoglobin, 3,000,000 red cells, and 6,300 leucocytes. There was a small mass palpable over the right appendages and the uterus was large and fixed. Assuming that this was a well marked case of chronic metritis with the remains of the ectopic, hysterectomy and right salpingo-oophorectomy were done. The right tube was filled with old blood and the left was normal. The adhesions about the former were dense. The uterus instead of being fibrous was soft and muscular, and when opened the vessels did not stand out as they do upon the cut surface of a case of chronic metritis. The mucosa was healthy. Before operation a slight grade of myxœdema was suspected owing to puffiness of the eyelids and the general appearance of the face.

The nails were brittle, and she had become bloated during the last year in spite of the hæmorrhages. In fact she presented the appearance that would at once rouse suspicions of chronic nephritis. She was given nine grains of thyroid daily, and her whole facial expression has changed. The operation was a very bloody one, owing to the low index of blood coagulability, every raw surface bled profusely, a thin, very liquid, pale red blood. We are firmly convinced that this again is another one of these cases which are most favourable for combined calcium lactate and thyroid treatment, and we feel equally certain that had this treatment been instituted early, operative interference would not have been necessary.

The second case is that of a woman of thirty years. She had had three children, the youngest being five years. Menstruation had never been quite regular. She was a strong, athletic girl. Five years ago, after the birth of her last child, she began to suffer from amenorrhœa. Menstruation would recur at long intervals. Periods of amenorrhœa of three, four, and six months would come on. Menstruation was very scanty. Headaches were extremely severe at the time when menstruation should come on and her skin and nails were very dry. There was marked general pruritis. At first there was somnolence with increase in weight, but of late there has been insomnia with loss of weight. Two years ago she had five "epileptic seizures" at five different periods when menstruation should have come on, but did not do so. The thyroid was not palpable. She had not been pregnant during the last five years. She has improved remarkably under thyroid treatment. Menstruation has become regular and the patient is not nearly so nervous nor so dull, mentally. Premonitions of impending troubles made her life miserable. These have totally disappeared.

This patient's only sister has never menstruated regularly. She has long periods of amenorrhœa, and she weighs one hundred and eighty pounds although only twenty-one years of age. Thyroid treatment was begun just a few days ago, so we cannot as yet speak of the effect. These two cases suffice to show how profoundly the sexual function may be disturbed through insufficiency of thyroid secretion.

THE INFLUENCE OF HYPERTHYROIDISM UPON THE SEXUAL FUNCTION: Of excessive thyroid secretion we must recognize two types, which are really one and the same disease, differing only in degree. The typical case of an exophthalmic goitre is easy of recognition; but many cases exist in which the cardinal symptoms are absent, though the secondary symptoms are much to the fore. These cases are difficult of diagnosis. Elliott has drawn attention to the importance of these cases. Let us quote from this author: "The frequency of occurrence

of morbid overactivity of the thyroid gland is probably much greater than is generally believed; for, with the present better appreciation of the nature of thyroid intoxication, many cases are being thus interpreted that in other times were probably passed over as instances of neurasthenia, hysteria, functional heart disease, and anæmia."

The influence of hyperthyroidism in producing sexual change has been known for many centuries, but it was not until 1859 that Charcot brought the knowledge of the day into a logical and tangible form in his articles of 1859 and 1862. He brought into prominence the close dependence of menstruation and ovulation upon normal thyroid secretion. Aran, in 1865, in a paper before the "*Academie de Médecine*," laid great stress upon the influence of hyperthyroidism in producing disturbances of menstruation, chiefly suppression, and in this address he outlines his treatment by stating that every means ought to be adopted to bring about a congestion of the uterus and thereby reestablish the suppressed menses. Of course Charcot and Aran assumed that lack of menstruation was the index which pointed to the uterus as being the organ which stood in close relation with thyroid function. But to-day we know that menstruation is but the outward sign of ovulation.

The change in function of the uterus is not always the same in hyperthyroidism, just as we pointed out under hypothyroidism. In one case we find amenorrhœa, in another menorrhagia. Alvarez has drawn attention to this change in a recent paper upon the frequency of hyperthyroidism in Mexico. But the most interesting communication has been that of Pinard, who gives the histories of several cases, which, owing to their great interest, we have thought worthy of being copied rather fully:

CASE 1. Exophthalmia at puberty; improvement of the exophthalmia when menstruation became regularly established; further improvement during first pregnancy; three years later return of exophthalmic goitre, coincident with amenorrhœa; improvement set in as soon as menstruation returned.

CASE 2. Irregular and delayed menstruation, coincident with onset of exophthalmic goitre. She would have periods of amenorrhœa of several months' duration and when menses came on it was always very scanty.

CASE 3. Amenorrhœa coincident with symptoms of exophthalmic goitre, and improvement and final disappearance of all symptoms coincident with return of normal menstruation

CASE 4. Coincident amenorrhœa and symptoms of exophthalmos.

CASE 5. Amenorrhœa followed by appearance of typical exophthalmic goitre. Menstruation returned later, and with the setting in

of the ovarian function symptoms of goitre began to disappear. A sister had synchronous onset of menorrhagia and exophthalmos. Improvement of latter came on with improvement in the former.

CASE 6. Synchronous onset of gradually delayed menstruation, followed by complete suppression, with gradually increasing symptoms of exophthalmic goitre. Reappearance of menstruation coincident with complete relief from goitre symptoms.

CASE 7. Irregular menstruation with complete suppression at the same time that symptoms of hyperthyroidism occurred. After six months of treatment, return of menses and complete disappearance of symptoms.

CASE 8. Increase in size and weight coincident with suppressed menses and onset of exophthalmic goitre. Eighty-eight days after onset of treatment reappearance of menstruation, disappearance of goitrous symptoms, and a loss of fourteen pounds.

CASE 9. Woman of forty-eight; onset of amenorrhœa with flushes, dizziness, weakness, increase of weight, insomnia, and all the nervous symptoms of the menopause together with all the cardinal symptoms of exophthalmic goitre. Menstruation did not return, but under treatment all the symptoms of exophthalmos disappeared.

We have purposely quoted these cases in this category as showing the influence of the thyroid over the function of ovulation and of menstruation. But with equal justice one might contend that it is defective ovarian function, and its consequent absence of uterine function, which causes the over activity of the thyroid. And this latter view is just the one that Pinard takes as being probably the correct one. He quotes Trousseau as follows: "There is, therefore, another morbid symptom which deserves special mention, the *suppression of the menses*. In fact, all the women who are the subjects of Graves' disease give a history of menstrual disturbance. At first the menstrual flow is irregular and later ceases altogether, and when it is reëstablished the patients seem to take on improvement, whereas, on the other hand, they nearly always experience an exacerbation of the goitrous symptoms at the periods when menstruation should have made its appearance. . . . I therefore had good reason not to consider the amenorrhœa as a phenomenon of secondary importance. On the contrary, I am tempted to accord it a prominent place as a factor in the ætiology, course, and duration of the exophthalmic goitre." Pinard, commenting upon these lines, writes: "Judging from this extract, it seems to me that once again Trousseau has shown himself a great clinician."

From the foregoing it must not be assumed that the amenorrhœa is a necessary concomitant of exophthalmic goitre. Two cases within

our experience did not give any history of any derangement whatsoever of their sexual function, and Elliot and Alvarez quote cases that were also unaffected as to their menstruation. Albutt also states that menstruation may be unaffected, and Bramwell and Elliot refer to some in which menorrhagia was a feature.

THE INFLUENCE OF SEXUAL FUNCTION UPON THYROID ACTIVITY: This again may be readily subdivided into two groups; namely, (1) The influence of lessened sexual function, and (2) The influence of increased sexual function upon thyroid secretion.

To preserve a correspondence with the foregoing order, it will be well to begin with the influence of lessened sexual function upon thyroid secretion. It is a well-known fact that exophthalmic goitre is a disease of the sexual age. Cases are rare, indeed, which show the symptoms before fifteen years of age. On the other hand, myxœdema is a disease of infancy and early childhood as well as of the decade between thirty-five and forty-five years. Let us quote from Osler: "Most cases of exophthalmic goitre occur between the ages of sixteen and forty. The proportion of women to men is eight to one. Cases in children are rare. After fifty the incidence in general is rare, and men then are relatively more often affected." Albutt writes: "Whilst the disease may arrive at any age, it is chiefly between puberty and menopause that it occurs. I have not observed a case in a patient under twelve." But, on the other hand, cretinism and myxœdema are diseases prone to occur before and after the menstrual life. More than half the total cases of myxœdema occur in women between forty and forty-five years of age. And cretinism is a disease of childhood. These factors taken into consideration, we must assume that the absence of ovarian and menstrual function is a strong, predisposing factor in the production of myxœdema. Multiparity is a strong, predisposing factor, and we argue from this that the physiological hypertrophy of the thyroid with each pregnancy, and its subsequent involution post partum, causes an instability of the gland function, which is in consequence prone to pass over into pathological states. But to this we shall have occasion to return later.

That the arrest of menstruation at menopause is very frequently followed by the so-called nervous phenomena of the climacterium is well known to every student of medicine. But it is only lately that these symptoms have been referred to a loss of balance among the ductless glands, owing to the withdrawal of the ovarian influence. In chosen cases, brilliant results have been achieved by the exhibition of small doses of thyroid extract. The dose must be very small, inasmuch as these patients react very promptly. Such has been the experience

of Alvarez and others. It may be objected that many, indeed most, of these symptoms of menopause are those of exophthalmic goitre and not those of myxoedema. That, indeed, is true, but it is singular how some cases present combination symptoms, and these are the hardest to diagnose. "It is entirely probable," writes Alvarez, "that the thyroid secretion is composed of various elements, and that some may be diminished or absent, whilst others are normal or over-active. This can help to explain those cases in which hyperthyroidism and hypothyroidism are plainly present at the same time." Pittfield suggests that the thyroid secretion may be almost as complex as the blood plasma and its different functions. In our experience very small doses of thyroid have very effectually relieved the symptoms of artificial menopause brought about by complete removal of the plevic organs. Moreover the marked obesity, which so frequently comes on after castration, can be controlled, in the majority of cases, with very great ease by the careful administration of thyroid. This is strong therapeutic proof that castration is followed in a large percentage of cases by symptoms of lessened thyroid activity. And lastly, we would call attention to the marked amelioration which pregnancy calls forth in patients suffering from exophthalmic goitre. In such cases the arrest of menstruation and lactation seems to make a lessened demand upon the thyroid gland with a consequent lessened secretion, or perhaps a more scientific explanation is that during pregnancy, as we shall see later, more thyroid secretion is needed in the economy owing to the rapid cell division in, and increased metabolism of, the foetus. Hence there is less superfluous secretion to exercise its baneful influence upon the maternal tissues.

THE INFLUENCE OF INCREASED SEXUAL FUNCTION UPON THYROID ACTIVITY: The types of cases which illustrate this fact are so numerous that it will be quite impossible to deal with the subject fully without lengthening this paper unduly. It will suffice for our purpose to point out some of the main types to demonstrate what a potent factor increased sexuality is in eliciting increased function of the thyroid. It is a common occurrence to find increase in the size of the thyroid gland with the onset of puberty. In a large number of cases the gland increases with each menstrual epoch. With this there may be tremors and some of the primary or secondary symptoms of exophthalmic goitre. Pregnancy is a potent factor in causing enlargement of the thyroid. Freund noted this in forty-five of fifty pregnant women, and Lange found enlargement in 108 of 133 cases examined. Occasionally, as pointed out by Elliott, this physiological stimulation may be the starting-point of a genuine Graves' disease, or, on the other hand, the subsequent involution may proceed to a pathological degree and end in a genuine

myxœdema. He concludes by stating that rapidly repeated pregnancies, with their attendant lactations, by causing hypertrophy and subsequent involution—gland instability—are particularly hazardous to the welfare of the gland.

There are other factors of a sexual nature which profoundly affect the thyroid gland. We have had within recent date two cases in which abnormally frequent sexual relations, continued over a very long period, had produced remarkably widespread pathological changes. The one was the young wife of a robust, virile blacksmith. It was a common thing for sexual intercourse to take place eight and ten times daily. Menstrual periods caused little difference in their habits. They had been married six months, when I was called to treat her for backache, nervousness, and general lassitude. She complained that her neck had grown quite large in the last two months. She had tremor and tachycardia. The uterus was almost twice the normal size, soft, very congested, and the cervix was as soft as that of an early pregnancy. The ovaries were readily palpable, large, tender, and freely movable. The thyroid was quite perceptibly enlarged. A general tonic was given and the young woman advised to go away for a month. Upon her return the whole condition had changed. The thyroid had assumed its normal dimensions, and the pelvic organs were greatly reduced in size and were firmer and less tender. A second case, very similar in history, responded equally well. We think that there can be little or no doubt that in these cases constant or rapidly occurring periods of congestion of the ovaries called forth the increase in size of the thyroid.

It is a common thing in chronic inflammatory disease of the uterine appendages, especially of the tuberculous type, to find markedly increased sexual desires. In three cases of fairly recent date the exaggerated symptoms amounted to nymphomania. In all these cases the condition was advanced tuberculosis. We write the above to show that chronic, destructive lesions like those of tuberculosis, even where the ovaries are converted into pus sacs, do not necessarily mean loss of ovarian secretion. If complete ovariectomy removes sexual desire, we think we are justified in assuming that this is due to withdrawal of the ovarian secretion, and equally justified in assuming that abnormally increased sexual appetite must be a result of ovarian hyperactivity. It does not follow that under such diseased conditions this hypersecretion is simply a normal secretion in excessive quantity. It may be perverted, but it is nevertheless an ovarian activity. That is just what we wish to prove in our case cited at the beginning of this article. The diseased appendages must have thrown an increased ovarian secretion

into the circulation, which called forth an increasing demand for thyroid activity.

It would seem, under the circumstances, that these two ductless glands, the ovary and the thyroid, stand in their relation, not as compensators, but as neutralizers. And that this is the case throughout the sexual life of a woman is evident from the whole of the contents of this paper. We see enlargement of the thyroid taking place at puberty, when ovarian activity takes on such importance as to change the whole character and conformation of the body of a girl; we see increased thyroid activity—at least enlargement of the thyroid gland—coincident with sexual relations. The same change occurs with pregnancy, and in many cases signs of increased activity of the thyroid with each menstrual flow. Then again, we find this statement that these glands act as neutralizers, and not as supplementors, substantiated by the lessening of the thyroid activity coincident with lessened ovarian function. For example, myxœdema, and infantilism and cretinism are prone to develop in the ages when the ovaries have not as yet taken on active function, or have ceased to functionate. We have seen that infantilism and cretinism develop before the age of fifteen, and that two-thirds of myxœdematous cases develop between forty and forty-five years of age. Moreover, in many of these cases there is a tendency to early menopause. This is the first time, so far as we can ascertain, that this antagonism of two internal secretions has been pointed out. We mean antagonism in the clinical, and not in the chemical or biological, sense. That the over-activity of the ovarian secretion, whether chemically normal or chemically perverted, calls forth a greater thyroid activity to neutralize its effects, seems forced upon us. It is possible, as Pittfield points out, that the thyroid secretion is a very complex body, as complex as the blood plasma. This readily explains cases like our own, where ovarian irritation and congestion cause a marked over-activity of the ovaries, and a corresponding increase in thyroid activity is demanded to neutralize the excessive secretion from the pelvic organs. But it does not necessarily follow that the complex thyroid secretion is wholly neutralized. Some of its compounds may remain over to exercise their injurious effects upon metabolism. That this is the case is shown in those patients that evince signs both of hypo- and hyper-thyroidism,—a deficiency in some ingredients and an excess in others. It is not imperative, not even probable, that it is the same ingredient, the absence of which brings about the symptoms of myxœdematous cases, and the excess of which causes those of exophthalmic goitre.

The whole subject is one that is still clouded. There are so many

factors which enter to disturb the balance, that to be dogmatic is to be in error. In the first place, the interpretation of plus or minus ovarian activity by absence or regularity of menstruation, or by plus or minus sexual appetite, is of course completely unjustifiable. Moreover, the chain which unites all the ductless glands is so complete that to reckon with any two, leaving the others out of account, is equally unjustifiable. The pituitary and parathyroid functions seem so closely allied with that of true thyroid function, that they, too, enter to add their quota of complicating factors. Cushing has drawn attention to the close relation of the ductless glands in the following sentence from his oration on surgery at the last meeting of the American Medical Association. "It is impossible to remove,—probably, partially to remove—the hypophysis or any other gland, without producing marked alterations in all the other glands,—thyroid, parathyroid, adrenal, testicles, ovaries, islands of Langerhans, and thymus." We, therefore, must look beyond the individual cases to view the whole subject broadly.

Generally speaking, exophthalmic goitre is a disease which almost invariably makes itself manifest during the years of greatest sexual activity. This is matter beyond dispute. Equally true is it that myxœdema, together with its allied disease, cretinism, is decidedly a disease which manifests itself before or after the sexual life. In this we have the strongest argument in favour of our contention that these two glands are either under the same governing centre, or that they depress and stimulate each other into activity. In addition, we know the influence of pregnancy in causing amelioration of exophthalmic symptoms, and in causing aggravation of the symptoms of myxœdema in those who are already deficient in thyroid secretion, or in causing the symptoms of myxœdema to appear in those who have no reserve thyroid force. Those who are *au fait* in the histology of the ovary know that during pregnancy not only is the corpus luteum frequently of huge dimensions, always larger than the corpus of menstruation, but there is development of lutein cells in all the other unruptured, only partially matured Graafian follicles, together with increased, secretory signs in all the interstitial cells of the ovary. It is this increased activity of the ovarian, secretory structures—though necessary for the pregnant state—which demands an increase in thyroid activity to offset some of its products, which are injurious to normal metabolism. A great deal has yet to be learned about the function of the ovary, and about the structures in the ovary which are the seat of its special function of internal secretion.

The French school of investigators who have worked upon this question, foremost among whom are Villemin, Bouin and Ancel, Cohn,

Frankel and Limon, have shown that there are two secreting structures in the ovary. These are, first, the corpus luteum, which has a function in relation to pregnancy, and second, the interstitial cells of the ovary. The former is periodical and elaborated for a special function, the latter varies not so much, is more uniform in its secretion, and is of longer life than the sexual life of a woman. Dr. Goodall, in his researches, has had many opportunities in which to corroborate the findings of these authors. If we stain a section of the ovary with hæmatoxylin and Sudan 111, we find fat cells, resembling in every particular the fat cells of the corpus luteum, scattered throughout the ovarian stroma. These are the constant, internal secretors of the ovary. After rupture of the Graafian follicle, another special, secretory surface is developed, the corpus luteum, which, in the menstrual phase, comes quickly to maturity and quickly atrophies. But in pregnancy it goes on developing to sometimes huge dimensions. The special function of this body seems to be to prepare the bed for the impregnated ovum in the uterus. In the ovaries of a pregnant woman we find that not only has she built up a large corpus luteum, but, in addition, in order to meet the demands made upon the ovary, every other Graafian follicle develops a large ring of lutein cells about it, and, in addition, the interstitial cells also have increased their function.

As to the chemical properties of these two secretions we know next to nothing, except that they stain with Sudan 111, and are probably very complex fats.

It will be readily seen that the internal secretion of the ovary which most influences the thyroid is the secretion from the interstitial cells. Frequently repeated intercourse will not cause ova to ripen at irregular periods, for, if it did so, we might expect very irregular menstruation. But intercourse, by causing frequent repeated congestions of the pelvic organs, does increase the interstitial secretion, and hence thyroid hyperactivity follows. Any chronic, inflammatory, pelvic disease may act in the same way. The symptoms elicited by greater thyroid demands at menstruation are due to the same congestive cause acting upon the interstitial tissue. The corpus luteum, on the other hand, has its own special, uterine function to perform.

Parrhon and Goldstein have tried to align these two organs, i.e., the ovary and thyroid, and leaving the other ductless glands completely out of consideration, have deduced conclusions which affect nearly every organ of the body. Unfortunately the subject is not so simple, and their conclusions are frequently based upon the flimsiest, and often misinterpreted, clinical and experimental evidence.

It is not our wish to give the impression that we are dealing with

the thyroid in direct relation with the genitals, or vice versa, for we are aware that to deal with the subject in this manner would be the greatest mistake possible. But out of the tangle we have tried to unravel a little, to show that these two structures are interdependent, but not once have we lost from sight the influence of the other ductless glands, and the possible sources of error arising from the interaction of these.

To further accentuate the close relation of the sexual organs with the thyroid, let us quote a few lines from a recent text-book upon biology by Gaskell. After stating that the thyroid in the scorpion and other animals empties its secretion into the uterine cavity, he continues: "What the function of these cells (thyroid) is I am unable to say. I can only suppose that the reason why the thyroid has persisted throughout the vertebrate kingdom after the secretory organs have found a new outlet for their products in the body cavity of the posterior region, is because it possessed some important function in addition to that connected with the exit of the products of the generative organs; a function which was essential to the well-being, or even to the life, of the animal. Yet, strange to say, though these organs were once intimately united, and are now widely separated, a mysterious, subtle connection continues to exist between the thyroid gland and the generative organs, even up to the highest vertebrates. That the thyroid gland, situated as it is in the neck, should have any sympathy with sexual functions is likely enough if it originated from a glandular organ in connection with the sexual organs of the Palæostracan ancestor of the vertebrate."

CONCLUSIONS

1. The relation between the female genitals and the thyroid is very intimate.
2. The generative organs which stand in such close relation with the thyroid are the ovaries.
3. That the uterus is devoid of any influence upon thyroid activity, except in that its function may affect the ovarian function and through this the thyroid.
4. Thyroid activity is in a measure under the governance of ovarian activity.
5. Ovarian hyperactivity is a frequent cause of the development of exophthalmic goitre.
6. Diminished, or absent, ovarian activity usually coincides with myxoedema.
7. Puberty, menstruation, pregnancy, lactation, and menopause, exercise a profound influence upon thyroid secretion.

8. Thyroid secretion and ovarian secretion do not supplement each other, they neutralize each other.

9. The ovary has two secreting structures,—the corpora lutea and the interstitial cells.

10. It is the secretions from the latter which seem to bring the ovary and thyroid into such close relation.

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MEDICAL INSPECTION OF SCHOOLS: REPORT TO THE CANADIAN MEDICAL ASSOCIATION

BY JOHN STEWART, M.D., HALIFAX

[Abstract]

DURING recent years and in almost all civilized countries there has been a steadily increasing conviction that no system of education is complete which does not provide for medical inspection and supervision of schools and school children. All the great writers on education of modern times lay stress on the importance of bodily health and vigour, and, in their various systems, make provision for physical training and school hygiene.

Early in the seventeenth century Comenius, generally regarded as the father of modern education, made physical training a prominent part of his plan, and showed the advantage and necessity of airy school rooms and pleasant playgrounds. Towards the close of the same century, John Locke published his well known "Thoughts Concerning Education," in which he laid down minute rules for the physical exercise, diet, and regimen of the school boy.

Near the end of the eighteenth century, J. P. Frank, in Austria, made a study of school furniture and hygiene, and suggested a scheme of medical supervision, and it may be noticed that "as far as primary schools are concerned, Austria was the first country to publish effective legislation. A ministerial decree of 1873 ordered the establishment of permanent health committees, with physicians as regular members."

The activity of the smaller countries is notable. Sweden has always had an honourable place. This, no doubt, is due to Ling, who studied medicine with the idea of organizing a scientific system of physical training. His system was adopted by the Swedish government in 1813, and the Central Gymnastic Institution, Stockholm, which has had so great an influence on physical education, was founded.

The first medical man to make a thorough study of school hygiene was Lorinser, in Germany, whose tract on the protection of health in schools was published in 1836. He attacked the school system of the day, and claimed that it was largely responsible for the deterioration in child health. His work attracted much attention, and the opinion gained ground that school hygiene was a subject demanding care

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study. Influenced by his work, the Swedish government in 1840 appointed school doctors in some of the training colleges, and in 1863 prescribed duties for school physicians in secondary schools. A few years later, in 1842, Dr. Seguin, in France, studying schools from a different point of view, that of the mental condition of the children, was led to publish a work on the moral treatment, hygiene, and education of idiots. Although, previous to this, classes for idiots had been organized at certain asylums in Paris, this was the first attempt to differentiate educational methods for defectives. It marked a distinct advance, and was soon followed by the establishment of special institutions for the education of the feeble-minded. In 1865 a school commission in Norway did much to show the importance of school hygiene.

In the early part of the nineteenth century, an English oculist, Ware, studying the condition of eyesight among school children, called attention to the relation between eyesight and educational pursuits. But more than fifty years passed before any other notable work was done in this most important field. In 1866 Herman Cohn, a Prussian army surgeon who had served in the Austro-Prussian campaign of 1866, and had been struck by the frequency of defective vision among soldiers, began his classic research into the eyesight of school children in Breslau, and his famous report on the investigation of the eyes of ten thousand school children, etc., appeared in 1867. "It may be said without exaggeration that, in the main, these researches form both the beginning and the inspiration of the systematic and extensive inquiry into the physical conditions of school life which, in the writings of many experts of various countries, has been one of the marked features of modern educational progress." Cohn continued his work in all branches of school hygiene, especially considering all matters affecting sight, as the illumination of schools, the position of desks, the character of handwriting. In 1869 the illustrious Virchow advocated medical inspection of schools, and the subject was discussed in that year at the scientific congress at Innsbruck, and at the international congress of hygiene held at Geneva in 1883. Cohn strongly recommended the appointment of school doctors and drew up a scheme of duties for them.

At the first international congress on school hygiene held in Nuremberg, in 1904, the first paper was read by the veteran Cohn, who narrated the steps of his original investigation and showed that (1) the number of short-sighted children steadily increased with the development of schools from the lowest village school to the gymnasium; (2) the number of cases of short sight increased from class to class; and (3) the degree of short sight also increased from class to class.

One of the earliest commissions of enquiry into the condition of schools was that appointed by Baron von Manteuffel, governor of Alsace-Lorraine. This commission reported in 1882, and recommended the efficient inspection of school buildings by medical officers, and the general improvement of school buildings and equipment. In the same year a Danish commission reported that of sixteen thousand children examined in both primary and secondary schools 29 per cent. were unhealthy. In 1884, a royal Swedish commission was appointed to investigate the health of schools. Prof. Axel Key examined eighteen thousand children in different countries, and published a report on the growth and development of boys and girls at different age periods. He reported that about 35 per cent. of school children suffered from various, chronic, physical defects, anæmia, headache, myopia.

In the last quarter, then, of the nineteenth century the case for medical inspection of schools was gaining ground rapidly everywhere. In 1883, the first school doctor in Germany was appointed at Frankfort-on-the-Main; in 1885, in Switzerland, at Lausanne; and in 1886 medical inspection of schools was instituted for all the departments of France. In England there was as yet no definite, organized, statutory system. The Education Act of 1870 had established the board school and made education compulsory, but educational authorities were slow to apprehend the value of medical advice and assistance. But the researches and writings of such men as Galton, Clement Dukes, Sir J. Crichton Browne, Dr. Francis Warner, Sir Shirley Murphy, and others, as well as a knowledge of the advance made in Germany and other countries, were having an effect. In 1890 the London school board appointed a medical officer, and in 1893 the Bradford school board followed.

In 1903 a royal committee on physical training in Scotland issued a report which had a notable influence in determining action in Great Britain. The committee found definite evidence of physical deterioration, and reported that "though medical inspection was necessarily mainly for remedial objects, it was also necessary in order to make available information of the highest value both for ascertaining the facts of national physique and the means that may be adopted for its improvement, or for retarding such degeneration as may be in progress," and recommended medical inspection of schools.

In the following year the report of the inter-departmental committee on physical deterioration appeared, and, proving the existence of a marked degree of physical unfitness, expressed a sense of the importance of methodical, physical training, and recommended that "a systematized medical inspection of school children should be imposed as a public duty on every school authority."

In 1907 the second international congress of school hygiene met in London. By this time the movement in favour of medical supervision in education had culminated in the Educational Bill of 1907, which made provision for health inspection in the following terms: "The powers and duties of a local education authority under Part III of the Education Act, 1902, shall include: The duty to provide for the medical inspection of children immediately before or at the time of, or as soon as possible after, their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools."

The position of medical inspection of schools in the leading countries of the world may be briefly stated as follows:

AUSTRIA-HUNGARY. In Austria, "a number of state physicians have been appointed to inspect schools, to make suggestions for the amelioration of evil conditions, and to submit annual reports. In addition, certain localities have undertaken to supplement this inspectorial system by appointing local physicians for special work. Vienna has a special law dating from 1895." In Hungary, "the office of school physician was created in 1885, and two years later a number of physicians with specified duties were appointed for secondary schools."

FRANCE. Certain regulations were made in 1833, but little was effected until 1884, when health inspectors were appointed in Paris. In 1886 medical inspection of schools was decreed for the departments. The communal physicians of the poor were required by the law of 1892 to inspect all children in the provincial schools. "The system of medical inspection was completely reorganized in Paris in 1896. In each district schools are now divided into groups and a local school doctor is appointed to visit each fortnightly, and is expected to make a careful examination of each child once a month. Some of the school doctors undertake special investigations in the problems of school hygiene."

NORWAY. "The history of medical inspection in Norway presents a model of orderly and progressive legislation. In 1885 some localities had appointed school physicians. In 1889 permissive regulations were passed, empowering local authorities to appoint health inspectors." In 1891 these regulations were made compulsory.

"The duties of medical inspection were entrusted to salaried local physicians, who were required to investigate the health conditions of the children in their schools three times a year. In 1898, a further law was passed, instructing school physicians to attend to the fuller requirements of school hygiene and to furnish an annual report." Al-

though the population of Norway is so sparse that ten per cent. of the children walk two and a half miles or more to school, every school has a medical officer.

SWEDEN. This country has been a pioneer in this work. As early as 1868 a local medical officer was attached to the staff of each school. In 1878 an examination as to general health was held at the beginning of each term. Medical supervision of primary schools was inaugurated in 1895.

SWITZERLAND. "In 1898 the Swiss Federal Government recommended the medical examination of all children upon their first admission to school. Thirteen cantons carried out the recommendation, and many of these had previously made additional provision for systematic health inspection and for general school hygiene." In almost every school board through the country a doctor is to be found as an active member.

RUSSIA. In 1871 Russia made provision for medical inspection. The minister of education has a medical department at his service.

GERMANY. In Germany, as in England, the function of the school doctor is to advise and report. There is no power of compulsion. There are various regulations in the different provinces, but the Wiesbaden system, especially since, in 1898, the Prussian ministry urged its adoption by all towns and municipalities, has spread rapidly. The work in Germany is very thorough, and one of the aims of administration is to "reduce as far as possible the number of children allotted to each school physician, with the object of securing more personal work."

UNITED STATES. "In the United States of America the chief aim of the medical inspection, so far, has been directed towards the prevention of infectious and contagious disease. Much useful work has been done in this direction by various municipalities, but very little has been attempted with regard to the real problems of school hygiene, except in Boston, where a director of school hygiene was appointed as early as 1891. In the following year, medical inspectors were first appointed for the prevention of contagious disease; next, the problem of school sanitation was considered; then came the physical condition of all school children, followed by the scientific study of child life and of problems of school hygiene. This evolution extended over a period of sixteen years, and now a fully staffed special department of school hygiene has been established, with a director, three assistants, special instructors in military drill and in physical training and athletics, playground teachers, nurses, and a medical inspector of special classes. In New York and other cities a great deal of work has been done for the prevention of infectious and contagious diseases. Legislation as to medical

inspection exists only in four states. In 1906 a mandatory law was passed in Massachusetts, which made provision: (1) for the detection of contagious disease at school; and (2) for the annual examination of children (a) by physicians, for non-contagious physical defects, and (b) by teachers, for defects of eyesight and of hearing."

JAPAN. "In 1898, in Japan, the minister of education ordered the appointment of school doctors at every public school. Only places with less than five thousand inhabitants are exempted. The school doctors are nominated by the local governors, and their duties are defined by law. The schools are visited once a month."

ARGENTINA. Here we can trace German influence. In 1888 the republic entrusted the medical supervision of primary schools to a school medical board. Later, the secondary schools were placed under the supervision of a special school section of the national board of health. These specialists carry out routine inspection, and make a scientific study of school diseases and prevention. At the International Congress of School Hygiene, in London, in 1907, Dr. Anschutz, of Buenos Ayres, told how Argentina had inaugurated medical inspection and insisted on proper buildings, cleanliness, facilities for bathing, vaccination, the segregation of defectives, and country schools for weakly children.

VICTORIA has begun the work by appointing three inspectors, two being women. There is, however, an average attendance at the schools of one hundred and fifty thousand.

NEW SOUTH WALES. Medical inspection was introduced in 1907, with one inspector at first. A woman has subsequently been added.

TASMANIA. The staff is small. One inspector, a woman, visits all the rural schools.

CANADA. Coming now to our own country, we find that in all the provinces a beginning has been made. Public interest is being gradually awakened and the medical profession generally advocates increased attention to the physical condition of the pupils in our schools. But so far, with one exception, none of the provincial governments has taken decided action on the matter. This exception is British Columbia.

BRITISH COLUMBIA. In 1910 the legislature of British Columbia passed an Act regarding the medical inspection of schools. It is a compulsory Act, providing for the appointment of school health inspectors who, save in exceptional circumstances, shall be duly qualified medical practitioners. The duty of the inspector is to examine as to the general health of all children attending school at least once in every school year or oftener if required by the trustees; also to examine all teachers and janitors. The school building and surroundings are also to be

examined, and the inspector is to report the result of his examination to the trustees. If the inspector considers that the state of health of any child, or of a teacher, is such as to endanger the health of others he or she shall be reported, and the trustees are to act on the report and remove such person from the school. The school trustees are also required to have the condition of eyes, ears, teeth, and throat of each child examined at least once in every school year, and parents are to be notified of any defects. The inspector has supervision of the physical exercises in the schools. All appointments under the provisions of the Act are to be subject to the approval of the provincial board of health.

ALBERTA. Provision was made during the last session of the Alberta legislature for the employment of medical health officers in town or city schools. Already advantage has been taken of this provision in at least two or three of the larger centres, and health officers have been appointed who are to devote their whole time to the medical inspection of schools.

SASKATCHEWAN. Up to the present the government has taken no steps respecting the medical inspection of schools. In the larger centres in the province, however, steps are taken by the local authorities to see that this important branch of work is fully carried out.

MANITOBA. There is no provincial legislation providing for the medical inspection of schools. A locality may adopt any method of inspection it pleases, at its own cost. Winnipeg has a well organized system of inspection. There are two part-time medical inspectors, one a woman, with salaries of \$900 a year each, and two nurses.

ONTARIO. No regulations as to medical inspection have been issued by the provincial department of education. Only in the city of Toronto is any provision made, and a staff has been organized as follows,—one chief medical inspector; eight assistant medical inspectors; one superintendent of nurses; seventeen assistant nurses.

QUEBEC. There is no Act providing for medical inspection in the province. "Fully organized medical inspection of schools exists in the city of Montreal, where the work is under the authority of the city council, and is conducted by a medical inspector and his staff. In 1909 the Protestant Board of School Commissioners of Montreal supplemented the work of the regular medical inspectors by appointing two trained nurses (Victorian Order) for eight of the Protestant schools. These nurses are supplied with a card index follow-up-system for each school, by the aid of which each child found to be suffering from certain forms of infection, pediculosis, scabies, etc., is followed from the time of diagnosis until a cure is effected. The nurses visit the homes of the defective children and demonstrate to and instruct the mothers in the application of the necessary treatments."

NEW BRUNSWICK. Nothing has been done by the education department. The city of St. John has taken up the matter and has appointed a health officer, a medical man, for the schools.

NOVA SCOTIA. Although there is as yet no definite provision for medical inspection in the schools of the province, the Education Act (Cap. 52, R.S., Sect. 108) provides that "The superintendent may with the sanction of the council withhold in whole or in part . . . the grant from the municipal school fund from sections failing to make reasonable provision for the health, comfort, and progress of the children attending the school." The superintendent, in his report, strongly urges the adoption of a system of medical inspection. In the city of Halifax the school board has appointed two medical men as inspectors. They are required to examine each child once a year, to make an examination of all new teachers, and to inspect the school buildings. In addition they may be called in by a teacher in any case of suspected illness at school. The Dental Association of Halifax in 1908 conducted, free of charge, a very complete examination of the teeth of the school children.

PRINCE EDWARD ISLAND. Nothing has been done by the legislature. The medical profession is interested in the question and are to interview the government again during the present session.

The case for medical inspection of schools lies, first, in the fact that in a large number of school children there are physical and mental conditions which are injurious to health and form a serious handicap in their education, or may constitute a menace to the health of their classmates; that many of these conditions can be prevented or remedied; that the recognition of these defects falls within the province of medical science; and that the first step towards their cure is accurate medical diagnosis.

It is to the undoubted advantage of both parents and children that any defects should be discovered as soon as possible, and that in the case of weakly children or those who are handicapped in any way, some modification of the educational course should be instituted. It is no less clear that in the interests of the strong and healthy this elimination should take place, for it is not fair that they should be delayed in their progress by the drag of their less intelligent classmates.

If there be any doubt as to the existence of these defects it can be set at rest by a study of the results of medical inspection in various centres. In the first annual report of the chief medical officer of the Board of Education in England, published in 1910, it appears that about 10 per cent. of the children examined on the eve of their leaving

school had such defects of vision as to call for examination by an ophthalmic surgeon, the vision being six-eightieths or worse. Otorrhoea was present in about 2 per cent.; 7 per cent. had a history of ear discharge, and, speaking generally, 5 per cent. had defective hearing.

As regards the condition of the teeth, the school medical officer of Bradford made a special examination of the teeth of nearly fifteen hundred children between five and thirteen years of age, and reported that only 6 per cent. had sound teeth. In Berlin, in 1904-5, the number of newly registered children examined was about thirty-five thousand, and of these 8.5 per cent. had to be set back. Of all the children under medical oversight there was defective vision in 22.4 per cent., and general debility of such a degree as to incapacitate for ordinary school work in 13 per cent.

Hogarth, in his "Medical Inspection of Schools," estimates that over 80 per cent. suffer from defective teeth; 50 per cent. from various parasitic affections; 20 per cent. from defective vision; and 10 per cent. from such ailments as adenoids, anæmia, and ear disease. Philip, of Edinburgh, points out that while the mortality from pulmonary tuberculosis is decreasing in Scotland, and decreasing in a remarkable ratio in the years of early childhood, there is a rapid and striking increase in the death rate among children of from ten to fourteen years of age. "Evidence is rapidly accumulating that it is especially during childhood and school life that the tuberculous seed finds a nidus."

The scope of medical supervision should include the school building, its construction and architecture, the healthfulness and the amenities of its site, its ventilation, illumination, and the methods used in keeping it clean and free from dust, its furniture, cloak rooms, fire escapes, sanitary conveniences, gymnasium, baths, and playgrounds. To be complete, medical inspection should include the examination of the teachers. At the International Congress of School Hygiene, in 1907, Oldwright, of Toronto, and Jessen, of Copenhagen, drew attention to the prevalence of tuberculosis among school teachers, and various observers in the United States have also commented on this aspect of school life. Any case of "open" tuberculosis in a teacher should be reported.

As regards the actual inspection of the school children, there is wide divergence in practice. The simplest possible form of inspection might consist in a visit by the school doctor to the school room, where, while work was going on, he might gain a general idea of the condition of the pupils, their general appearance, alertness, intelligence, attitudes, distinctness of speech, and so on. Then, each child might come up in turn for closer inspection, when attention would be paid to the con-

dition of the teeth, throat, ears, cervical glands, and skin. The eyes, too, could be examined for squint, corneal ulcer, and, if necessary, vision could be tested with test types. Any such deformity as club foot, flat foot, knock knee, ankylosed joints, or spinal curvature, as well as faulty gait and attitude, would be observed. It might also be possible to detect some cases of defective intelligence. The results of all these observations should be noted and kept in a register, and parents should be notified of any serious defect. The examination could be simplified by the intelligent coöperation of the teacher, who should be able to prepare a list of those pupils who showed any abnormality, and thus lighten the work of the school doctor. Superficial as such an examination would be it should still be of great value. It could be arranged for now in any school; it needs no special apparatus beyond a set of test types, and a tuning fork, or the ticking of a watch, and could be carried out by any practitioner.

But it is generally realized that a much more thorough examination should be carried out when possible, and the Wiesbaden system of school examination may be taken as a model. The school authority of Wiesbaden based its action on the result of the investigations, already referred to, of medical specialists in Germany, Denmark, Sweden, and other countries, into the subject of school hygiene. These investigations led to the recognition of specific "school maladies," comprising not merely myopia but functional disorders, referable directly to mental and physical strain. Not merely the supervision of the school buildings, important though that was, but (1) the systematic supervision of the school children themselves, supplemented by (2) individual examination at stated intervals, came now to be recognized as the moral duty of the public authority which took into its care the collective training of the young in the most susceptible years, and for the last twenty years these two principles have been generally accepted as the basis of the school doctor's work in Germany.

The Wiesbaden regulation on the subject runs: "The school doctors have to examine the newly admitted scholars thoroughly in regard to their physical condition and their state of health, in order to determine whether they need permanent medical oversight or special consideration in the imparting of instruction, for example, exemption from special branches of instruction, such as gymnastics and singing, or restriction in the instruction given to them, the allotment to them of special seats on account of defective sight or hearing, etc." This examination has to extend to the heart, lungs, the higher air passages, the spinal cord, the skin, eyes, ears, mouth, the nose, and in the case of boys, to the abdomen. The result is recorded in a certificate, which

is followed up as the child advances in school, supplementary observations as to its physical development or defects being entered as often as necessary. Twice a year the height and weight of each child are taken by the teachers, with measurement of the chest by the school doctor whenever desirable. The health certificates of children who need regular oversight are endorsed to that effect, and these children must be presented for special observation whenever the school doctor visits the classes to which they belong. Further, a thorough examination of all children is made in their third, fifth, and eighth school years.

In accordance with the observations made, the school doctor advises the head teacher as to physical peculiarities which need to be considered in school work. Where maladies are found which require medical attention, the parents are advised direct, but a school doctor may not professionally attend a child upon whom he reports at school. The school doctor watches over the school life of every child. In some German cities the school doctor not only advises regarding health during school life, but, if requested by the parent, gives advice as to the career or occupation for the pupil on leaving school.

"In no country as yet is there an adequate state department of school hygiene," but in the Argentine Republic, in Japan, and in Australia, the foundations of such a department have been laid. In Germany the school inspection is organized by the municipalities; only in the Duchy of Meiningen is the supervision a state affair, and there is no coördinated imperial system. In England, the Education Act of 1907, by which the government created compulsory powers for systematic medical inspection, cast upon the local education authority the organization of this statutory duty, and recognizing that this new department of medicine could not exist apart from the larger sphere of state medicine, adopted the principle that the work should be undertaken "in intimate relation with both the machinery and the purposes" of the already existing public health service. The local education authorities have almost universally adopted this view, and have either appointed the medical officer of health of their area a school medical officer, so unifying the services, or they have arranged for the work of the school medical officer to be intimately coördinated with the public health service of their district.

Two systems are in vogue. (a) A special school doctor gives all his time to the work or a medical officer of health adds to his other duties the work of inspecting the schools of his district. In either case the inspector is not engaged in general practice. (b) In the second plan, whether the work be superintended by a special officer or not, it is done by the practitioners of the district, each taking duty in rota-

tion, or dividing the schools among them, and giving, of course, only a part of their time to the work.

Each plan has advantages. In the first there is a more uniform method, and the advantage of special qualifications. But there are also advantages in having the general practitioner employed, as, living in the district, he is acquainted with the condition of the people and is always on the spot. The tendency in England is to discard the system of many part-time inspectors for that of a few whole-time officers, and the evolution of a new specialist, the school hygiene specialist, is in progress.

But school hygiene is not exactly a subordinate branch of public health, but something to be coördinated with it. For, while school hygiene is an integral factor in public health, it is also a factor in education. The two services should go side by side and aid each other. Hogarth considers that in all large towns there is ample scope for two medical officers, one responsible for hygiene and sanitation, the other for schools and scholars. He suggests a principal medical officer for each large town or county area to whom the various medical services should report. In reviewing the organization of the various public health services of England, Germany, and the United States, and noting the overlapping and want of correlation, as well as the expense incurred, the desirability of the establishment in Canada of a Department of Public Health, or a central bureau supervising all health agencies, seems very evident.

There are certain principles which ought to be observed by all concerned in the medical examination of schools. In the first place, a definite scheme should be agreed upon between the school board or educational authority and the inspector, and whatever be the extent of the examination it should be thoroughly done, and a methodical record kept of the results.

In the work of examination and supervision the school doctor should be tactful and show consideration for the feelings and even the prejudices of the parents. Experience has shown that parents may resent the action of the school doctor and even refuse to permit examination, although this is rare. At Frankfort, out of a total of probably one hundred and twenty thousand children only twenty-eight were withdrawn by their parents from examination. In England refusal to have children examined is so rare as to be negligible. The school medical officer of Birkenhead reports that 82 per cent. of the parents "took much interest" in the examination of their children. One of the best ways to secure the interest of the parents is to invite them to be present at the examination. This is generally done in Germany,

and provision is also made that, if the parents prefer it, the examination may be made and the certificate filled in by their own family doctor. It is certainly desirable that in any examination so complete as that of the Wiesbaden rule, or that laid down in the schedule of the English Act, Circular 582, the mother should be present, at least in the case of very young children and girls.

One of the difficulties in carrying out a thorough examination is the want of proper accommodation. In a large graded school the use of a class room may be secured, but in the smaller schools, school work must practically be suspended while examination is going on. This difficulty raises the question of the provision in all schools of a special room where medical inspection may be conducted. It also raises the question whether the examination of the child, the first examination at any rate, could not be made at home. If the system were adopted in which the general practitioner acted as examiner, this plan would not present much difficulty, but it would be unworkable in the case of a special school medical officer, who might have to traverse a wide extent of country, and could not possibly visit each home. Besides, it may be held that such an examination is not really an examination of the school child, for in many ways the reaction of a child to its school environment is different from that in its home, and its mental as well as physical peculiarities are better estimated among its fellows.

There is another aspect in which to view the method of delegating the examination of the child to the family physician, and it must also be considered in any scheme which enlists the services of the general practitioner. There are two dangers in such a method. The first lies in the wide variations in the diagnostic ability of a large number of men who have had no special training for this work. In no other way than by admitting that some men overlook or underestimate certain defects, can we explain the extraordinary discrepancies revealed in some returns of the results of inspection.

Among the statistics received from twenty counties and towns in England there are such inexplicable differences as these: Carious teeth, lowest percentage, .7, highest, 25; enlarged tonsils, lowest, 2, highest, 23; defective vision, lowest, .4, highest, 39; bodily deformity, lowest, .04, highest, 6; adenoids, lowest, 1.5, highest, 21. In the returns from one county, Worcestershire, one inspector reported under the head of phthisis .8 per cent., and another 15.5 per cent. In the report of the Govan school board there is ample evidence of a want of uniformity in testing vision in the various schools, for the percentage of vision below normal ranges from 6.5 to 77.8.

This feature is a serious defect rather than a danger. But the

other factor to which we must refer is the unmistakable reluctance of many doctors to adopt any measures which may conflict with the wishes, or the apparent and often selfish interests, of their own patients. Certificates are constantly being received testifying to the health of children who are afflicted with contagious diseases of the skin, eyes, etc., and on the other hand children are being detained from school who might quite well attend. It is clear that the undoubted advantages which may attach to the employment of the resident practitioners of a district as school examiners, may be quite neutralized by such serious drawbacks as have here been indicated.

The scope of our report does not include any reference to the treatment of the defects discovered during the course of medical examination. But it is evident that, except in reference to treatment, the whole system of examination otherwise yields only a barren accumulation of vital statistics. It is much to be desired that some degree of compulsion could be imported into our system of school hygiene. But so long as the public is possessed of its present ideas of liberty in health matters, so long, for instance, as the demands of ignorant agitators against vaccination weigh more in the legislative scales than the deliberate opinion of practical sanitarians, so long must we be compelled, which is not liberty, to see from twenty-five to fifty per cent. of the children of our country growing up to suffer for life from diseases and deformities which could have been prevented or relieved if taken in time.

A responsibility devolves upon the parent as soon as he is notified by the school doctor of any ailment or defect in his child, and the community or the state should see that this responsibility is met. Parents who can afford to pay, should be referred to their family physician; those who cannot pay must be provided for at the public expense. If it is right to apply large amounts of public money to prevent ignorance, it is surely right in the same way to prevent disease.

It is a far cry from the "detestable theory that the child belongs to the state before it belongs to its parents" to the equally detestable practice of permitting a parent to allow his child to be a menace to public health, a drag on national efficiency, and a burden on the exchequer of the country.

The examination and detection of defects is only the first step. The examiner picks out those children which suffer from physical defects, and refers them to their parents for treatment by their physician, or the oculist, aurist, or orthopædist, as the case may be. He notes the backward children, and recommends special classes or courses of study. Finally, he eliminates the defectives, those whose sad case may be a blend of physical, mental, and moral infirmity, the feeble-minded, the

idiot, the epileptic, for whom provision should be made in special institutions.

It is found that, speaking generally, parents are willing and thankful to follow advice given them. In Leipsig, remedial measures were at once adopted in 75 per cent. of the cases, and only in about 4 per cent. did parents absolutely refuse to act. In Berlin, "the advice tendered was, as a rule, received with gratitude and for the most part faithfully followed." But there are many instances of great carelessness. In Sydney, N.S.W., where dental diseases in the children were brought to the notice of the parents, less than 25 per cent. took any action. In cities and towns there should be little trouble in securing treatment, for there is an abundance of physicians and the services of specialists can be readily secured. But in the rural districts and the wide and sparsely settled regions of our own country the case is different. Probably the best method of meeting this difficulty is by organizing a "flying clinic," to use Dr. Osler's term. This is employed in some parts of England, for example in Somerset, to secure competent ophthalmic inspection and the fitting of spectacles. And it is also made use of in Germany to bring dental treatment within the reach of scattered communities.

Another agency which has been found exceedingly useful is that of the school nurse, especially among the crowded poor of the cities. "The school nurse . . . forms the connecting link between the home and the school on the one side, and the home and the hospital, or other medical agency, on the other. . . . She enables the child to stay at school or to get back to school in the shortest possible time. In New York, in 1902, before the advent of the school nurse, the school medical officers sent home ten thousand children. In 1903, after the advent of the school nurse, they sent home only eleven hundred children."

The following recommendations were unanimously adopted by the executive of the Canadian Medical Association:

1. That the Board of Education, Minister of Education, and Council of Public Instruction in each province, shall have an expert medical adviser, who shall organize a complete system of medical inspection and supervision of schools and scholars.
2. That as far as possible the school medical service and the public health service should be coördinated.
3. That the system adopted by British Columbia in the "Act to provide for the Medical Inspection of Schools, 1910," be approved by the Canadian Medical Association.
4. That in view of the vast importance of all matters affecting public health a section on public health should be added to the permanent organization of the Canadian Medical Association.

Case Reports

ACUTE TOXÆMIA: WAS COCAINE OR ADRENALIN THE CAUSE?

PAIENT, a nurse, aged twenty-one, born in Canada; nothing of note in the family history; always in good health, with the exception of a tendency to colds in the head and mouth breathing, due to the presence of adenoids and submerged tonsils, of a medium size, with hypertrophy of the inferior turbinal bodies.

An operation, under local anæsthesia, was begun on December 7th last. The nasal fossæ were sprayed, at a very low pressure, with a five per cent. solution of cocaine. At the same time a small swab, wrung out of a twenty per cent. solution of cocaine, was rubbed over the pillars of the fauces, the patient being cautioned not to allow any to be swallowed. Strips of cotton, soaked in the same strength of the solution, were laid against the inferior turbinal bodies, after being wrung out. Sufficient time having been allowed to secure anæsthesia of the pillars, a solution, made by mixing a two per cent. solution of cocaine with an equal amount of full strength of adrenalin solution, was injected under the mucous membrane of each faucial pillar on both sides and in the capsule, in all three syringe barrelsfull being thus used. Shortly after the latter procedure, the patient complained of nausea, faintness, and lightness of the head, followed by intense headache, for which a towel wrung out of ice water was placed on the head, and the patient was carried to a table and laid down in the prone position. The strips were removed from the nose, and the cautery was used on the right inferior turbinal. Meanwhile, the patient was noted to have a vacant expression, and the breathing to be quiet and shallow. Immediately on the removal of the cautery from the nose—the procedure had hardly lasted a minute, and no evidence of pain had been shown—the patient's limbs twitched quickly three times, while the body showed a tendency to become flexed backwards, and the eyeballs rolled upwards while the pupils dilated widely. This was at once followed by a violent convulsive seizure, epileptiform in character, with powerful twitching and contraction of the muscles of the limbs and face, and marked retraction of the head. The seizure lasted fifteen seconds or more. At the same time the breathing was imperceptible, the pulse likewise, and cyanosis and pallor alternated, the latter predominating. The jaws were locked during the seizure.

The mouth gag was immediately inserted with great difficulty, an injection of one-thirtieth of a grain of strychnia was made into the arm, an amyl nitrite bulb was broken and applied to the nostrils, and at the same time artificial respiration was commenced. On inserting the gag, the patient chewed it vigorously, and presently became relaxed, but did not regain consciousness. Respirations became noisy and heavy, while the pulse was one hundred and twenty-five, small and irregular. The left turbinal was now hastily cauterized, the gag opened, and a pad of adenoids removed. During the latter procedure, the patient struggled violently, the limbs became again rigid, and the facial muscles were forcibly contracted. The patient slowly regained consciousness, but the general condition was heavy and drowsy. She was removed to the ward at 10 a.m. Cyanosis was again present, the extremities were cold, and the pulse very irregular. Whisky was given freely, and ether, m.15, hypodermically. At 11 a.m. the pulse was imperceptible, but the patient was conscious and complained of headache. A mixture containing digitalin, gr. $\frac{1}{50}$, amyl nitrite, m.3, with spirits frumenti, drachms, 4, was ordered every hour, and strychnia, gr. $\frac{1}{20}$, given by hypodermic needle. Between this and 4 p.m. the pulse slowed from 140 to 120, and the urine was drawn off by catheter at 5.30 to the amount of 16 oz. On the second day the pulse had slowed to 90, was regular, with a good volume, and temperature was normal. The heart was auscultated, and the apex beat found to be one inch to the outer side of the normal point. In the mitral area a systolic murmur, transmitted to the axilla, in the aortic area a systolic murmur, in the pulmonary area a slight reduplication of the second sound, with a normal tricuspid area, were made out. These murmurs were less distinct when the patient sat up. At the end of the week, the pulse was 78 and regular, the murmurs less distinct, the apex beat nearer its normal position, and the patient readily became breathless. Three days later the patient was allowed to go home, but while the heart was apparently normal in size, the murmurs were still present, not varying in the sitting posture or in deep inspiration. Slight dyspnoea was noted on exertion, but no oedema. On January 15th, the end of the fifth week, she fainted in church, and has had to postpone her return to work for a further period. The murmurs are louder now than when she left the hospital, and there is dyspnoea on exertion.

Before proceeding further a few quotations from important references will be of interest. The following notes under the heading, "Acute Cocaine Intoxication," are abstracted from an interesting article by Gordon, in the *Journal of the American Medical Association*. During seven years he had fifteen cases under observation, and records the immediate symptoms as:

"Præcordial pain, rapid and filiform pulse, lividity of the face, cold extremities, cold perspiration, Cheyne-Stokes' respiration, and anuria. In nine cases there were, in addition, excitation, restlessness, loquacity, crying, or anger. In six, depression and a semistuporous condition, with anuzia, tachycardia, mydriasis, and peculiar hallucinations, the latter, visual (black insects and rats), and tactile (tingling, pinching, and a sense of holding imaginary bodies in the hands). In four, generalized convulsive seizures, without previous history of epilepsy, followed by a semicomatose state, lasting from one to three days."

Von Jaksh in "Modern Clinical Medicine," is the only reference which mentions "cyanosis combined with pallor," and he also speaks of "arrhythmia of the cardiac muscle." Allbutt, in his "System," mentions, among other symptoms, "hysteria—perhaps convulsions—muscular system suffers severely, pains often sudden and severe, cramps unilateral, chiefly on the side of the flexors, which may amount to general rigidity, and well marked tetanus, tetanic seizures (Schede), hallucinations, violent suicidal, and even homicidal (Bergmann), tendencies are recorded." Osler mentions that, after large doses, convulsions are frequently present, and are of the type of violent epileptiform character. At times these are partial, with unilateral or bilateral cramps in the muscles, chiefly in the flexors, which may go on to general rigidity and opisthotonos. Frey, in *Annals des Maladies de l'Oreille*, reported a case from Siebenmann's clinic, where after several applications of a ten per cent. solution of cocaine to the tube, opisthotonos, convulsive movements of the face, etc., were induced, lasting ten seconds, and followed by loss of consciousness for ten minutes,—the attack greatly resembling an epileptic attack. Barth had a similar result after application of six drops of a twenty per cent. solution to the nose pharynx, in a case of adenoids, the convulsions lasting one hour and a half, reappearing six hours later, and the following day.

Last year Harris reported to the American Laryngological Association, a fatal case of a man, aged thirty, where one-twelfth of a grain of cocaine, with a few drops of adrenalin, were injected into the tonsils; cyanosis developed, and the operation was quickly concluded, but the patient was dead, with symptoms of "thymic death." Autopsy showed a markedly dilated right auricle, and swollen right ventricle, enlarged axillary and groin glands, and a thymus weighing eighteen grains. Death was ascribed to an over dilated ventricle, due to an enlarged thymus gland with the cocaine-adrenalin as the exciting cause. To the same discussion Hubbard added the history of a fatal case from adrenalin. The patient, a healthy young man, under general anæsthesia for a septal operation, with every reflex normal, and respiration per-

fect, was given about fifteen to twenty minims of adrenalin chloride solution for hæmostasis. Immediately the heart fluttered, he gave a dozen respirations, and was dead. The drug probably escaped into the circulation and caused death.

It is difficult to estimate exactly what quantity of cocaine was absorbed by my patient. Of the one per cent. solution forty-five minims were injected, approximately nine-twentieths of a grain, provided not a drop escaped, which is improbable. Only a few minims of the five per cent. solution were used, and what proportion of the drug was absorbed from the wrung out wipes cannot be estimated. In this connexion Osler records a case where death followed forty seconds after the hypodermic injection of twelve drops of a four per cent. solution in a girl of eleven years, and a recovery after such a large dose as twenty-two grains by the mouth, and after ten grains hypodermically. Allbutt states that "one of us painted his throat liberally with a twenty per cent. solution, some no doubt being swallowed. Slight hallucinations and delirium appeared shortly after, but were unnoticed by others." "An injection of one-quarter of a grain into the urethra of a child was followed by death (Hay). Ordinary persons can tolerate one-quarter of a grain easily, and even as high as one grain. Reports of fatal cases vary from eight to twenty-three grains."

Two points of interest present themselves for discussion: How is the responsibility for the condition to be divided between the cocaine and adrenalin? Is the condition of the heart the result of the acute toxæmia? I know from personal experience that adrenalin will produce an intense headache, and except in cases of epistaxis, and to bleach the tissues prior to cocaineization for a resection of the septum, I use it in weak solution, especially when employing it hypodermically. The solution used in this instance was wrongly prepared, and should not have contained more than ten per cent. of the adrenalin solution. The reference to the case of Dr. Hubbard, quoted above, is the only one I have so far been able to discover where adrenalin is credited with producing such serious results, and yet it reminds me forcibly of a case of my own, where a lady, who had weakened herself with drugs, died suddenly under a general anæsthetic, immediately after I had injected a little weak cocaine, one per cent., with fifty per cent. adrenalin, into the nasal septum, preparatory to a slight operative procedure. The death was ascribed to the previous drug habit, but was adrenalin the cause? On the other hand, a glance at the list of symptoms will show that many of those present in my patient coincide with the list given in the above references, and especially the mydriasis, cyanosis combined with pallor, convulsions of an epileptiform character, cramps

of the flexors going on to general rigidity, and opisthotonos, followed by a semicomatose state, tachycardia, and anuria.

The coincidence of the tetanic spasm with the use of the cautery made me at the time suspect a short circuit, but I at once concluded that the electricity could have nothing to do with the spasm. There was at no time complaint of præcordial pain or any one of the mental symptoms recorded above.

Coming to the second question, our history is somewhat defective in that there is no record of a thorough examination of the heart prior to the toxæmia. The patient, however, passed the physical examination required for entrance upon her course two years ago, but no record was kept. The fact that she was accepted precludes the likelihood of the presence at the time of any serious lesion. Again, when the patient sat down on the operating chair, her pulse was taken by our chief anæsthetist, and nothing abnormal noted. There is, therefore, no record of the presence of any abnormal heart sounds prior to the toxæmia, and there is, further, the strong collateral evidence that the patient was an excellent swimmer, and during her last summer holidays achieved a record long distance swim of a mile and a half, and gave no history of dyspnoea on exertion. The heart symptoms pointed to the occurrence of an acute dilatation as a result of the toxæmia, and with some risk that the lesion may be permanent. There is no evidence in the references which I have quoted, nor in others which I have consulted, of the occurrence of heart symptoms similar to those exhibited by my patient, and the case is therefore of special interest in this one respect. The case of Dr. Harris is my only reference to one in which dilatation occurred, but it was elicited in discussion that he did not consider the cocaine *per se* responsible. The case I have reported is very suggestive as to the necessity for greater care upon our part as specialists in the use of both cocaine and adrenalin. In private practice I have abandoned cocaine in resection of the tonsils, and used instead novocaine, from which I have as yet seen no untoward results.

Toronto.

D. J. GIBB WISHART.

NOTIFICATION OF TUBERCULOSIS

ON the editorial pages of the February number of THE CANADIAN MEDICAL ASSOCIATION JOURNAL is an article on enforced registration of tuberculosis, which contains the following: "As to the wisdom of such a course there cannot be any doubt." May I be permitted to bring forward certain objections, which seem to me to outweigh the benefits that would result from enforced registration without restrictions?

The widespread fear of tuberculosis by the public, and often by the profession, would be excellent if it were combined with a more thorough knowledge of its true range and danger. This proper fear would not carry with it the stigma that now attaches itself to the tuberculous. Theoretically we accept the fact of the high percentage of tuberculosis as demonstrated by autopsies, and possibly also that a subject reacting to a tuberculin test is evidence of an exposure and tubercular implantation in the past. This latter evidence may be found in normal subjects as high as seventy-five per cent. That these are not the statistics for "clinical tuberculosis" is quite true, but then "clinical tuberculosis" is merely a varying extension of these "theoretical" conditions; and clinical tuberculosis, further, is limited by our inability to appreciate what otherwise would be clinical.

Unfortunately, from one man's hands a case that is really far advanced in anatomical involvement and possibly its own clinical response, is assured that his lungs are as sound as the examiner's. With those more skilled in the diagnosis of pulmonary tuberculosis, the infection is caught in its very beginning, in the clinical sense. Fortunately many people with these latter conditions unknowingly create their own cure without medical attention; but it is this ability on the part of the human subject that has prevented the necessity of the profession's realization of the extent of tuberculous involvements. It is only extreme skill and long continued experience that has brought about the diagnosis of true, incipient tuberculosis.

Then, the conditions are such that the patient who is the greater source of danger may escape, while the other, who may be in no way a public menace, becomes registered as tuberculous. The hardships that are attached to this are not confined to obtaining employment, and are often of a kind that tend to lessen that patient's chances for recovery. These are the results for the patient who seeks medical advice.

There is also, it seems to me, a problem for the diagnostician, or one skilled in the diagnosis of pulmonary tuberculosis, who, let us say, has within a period found twenty-five cases which he must regard as strictly incipient. No one can be sure that all of his diagnoses of incipency are correct, yet in one's judgement all should be considered as such, and, further, which is more important, treated as such. The great majority of the diagnoses are probably correct, yet with each individual case it becomes often an almost impossible question to decide absolutely. Is the physician to decide whether it is his results that are needed for public safety and to feel that the law applies to him only in cases that he thinks fit? An amendment to the law, whereby one might either report a diagnosis or allow the sputum to be examined for the presence of the bacillus, would seem to meet the situation more fairly. It is true that the sputum would have to be examined several times during several months, but it should not be difficult for the health departments to have this legal power.

This is merely a suggestion, not by any means attaining the ideal, which, with the existing conditions, seems hardly possible. If one might recapitulate, registration would result in unfairness to the patient, involving his financial and temperamental conditions, and, as well, honest difficulty and hesitancy on the part of the physician.

Gravenhurst.

ALFRED H. CAULFEILD.

"WE have, of late, become quite accustomed and even resigned to the gloomy belief that insanity, like cancer and pneumonia and cardio-renal disease, is increasing steadily in all civilized communities, and at a rate proportionately faster than that of the total population. It is, therefore, particularly comforting to learn, from the recently issued twenty-first annual report of the Asylums Committee of the London County Council, that during the year ended March 31st, 1910, the increase in the number of insane patients under treatment in the public institutions of the city was only one hundred and ninety-eight, the smallest annual increase recorded since 1892. Moreover, as in our own country and state, the incidence of insanity is proportionately greater among immigrant aliens than among native inhabitants. Perhaps such facts may justify the consoling conclusion that, after all, civilization is not necessarily self-destructive, and that in time education and adaptation may enable the fittest of us to survive even the menace of mental degeneracy, race suicide, and other kindred evils."—*Boston Medical and Surgical Journal*.

Editorial

GOITRE IN CANADA

SOME years ago Dr. G. A. Charlton, provincial bacteriologist at Regina, spent a summer bicycling over the Island of Montreal, making an unofficial census of the villages in respect to the incidence of goitre. He gained some most suggestive results which were duly published at the time. He found that goitre was absent along the shores of the island, and wherever the inhabitants obtained their water from the St. Lawrence or Ottawa rivers, while it was common in the more centrally situated villages. But here again a distinction was to be made out. Only where water was obtained from shallow surface wells, in sandy soil, did goitre prevail; in villages, where the wells were deeper and in the glacial clay it might be entirely absent. It was not, therefore, the underlying silurian rock that was the essential factor, although, curiously enough, goitre throughout the world is apt to show itself over lime-stone formations. But something further is necessary, something presumably of organic nature, it being well established that the water of shallow wells is richer in organic matter than is that of deep. These views are supported by the earlier observations of Kocher, that in Switzerland goitre waters are distinguished by their relative abundance of bacteria. Ewald had found that by changing the water supply of one of the villages in the Aar valley in Switzerland, the percentage of goitre among the school children was, in the course of ten years, reduced from fifty-eight to eleven per cent. Dr. Charlton gives a similar instance from the village of Pointe aux Trembles, where goitre, previously prevalent, has disappeared since the water has been piped into the houses from the St. Lawrence.

Along these lines Lustig and Carle in the nineties would

seem to have obtained some results by feeding the lower animals with water from goitrous districts, but their results have not been satisfactorily confirmed. Now, the convincing demonstration comes from Cashmere. Two years ago Dr. McCarrison, of the Indian Medical Service, announced to the Royal Society that of thirteen healthy individuals who had taken the suspended matter removed by filtration from known goitrous water at Gilgit, he himself and three others developed enlargement of the thyroid, which showed itself in from thirteen to fifteen days. In the February number of the "Proceedings" of the same society he gives a further communication, in which he shows that of twenty-three individuals previously unaffected, given each morning, for from thirty to fifty-five days, a drink of the suspended matter filtered from goitrous water, six showed enlargement of the thyroid persisting during the course of the experiment, while three others suffered from thyroid hypertrophy of a transitory character.

It is difficult to imagine that a causative agent which is removed by filtration and destroyed by boiling can be of any other than a microbic nature, and in support of this view that we deal with an organism which becomes parasitic in the alimentary canal, Dr. McCarrison gives photographs of a goitrous youth before and after treatment by the bacillus bulgaricus. The world seems getting very small when the latest fashionable method of employing Satan to drive out Beelzebub is being used upon the natives of Cashmere. It will be interesting to observe what results others obtain by similar treatment.

That there is an intimate association between intestinal disturbances and disorders of the thyroid has been maintained for years before a somewhat heedless public by Dr. W. H. Thomson, of New York. But if thus goitre, or, more accurately, diffuse enlargement of the thyroid, is of microbic causation it would seem evident that we do not deal with an ordinary infection or a direct presence of the microbes within the thyroid, and that because we have abundant evidence

that early goitres disappear when the affected individual removes to a non-goitrous region. It would seem that we deal rather with some intestinal saprophyte derived from the water, whose toxins, absorbed in the alimentary canal and circulating in the blood, have a specific action upon the thyroid gland. When the patient is removed to another region and gains there a new intestinal flora, or fauna, then, these toxic substances being no longer produced, the organ returns to its normal state.

Yet other observations of no small interest have been made during the past year by the state boards of fisheries in New York and Pennsylvania upon the goitrous tumours of fresh water trout. The development of these tumours in the hatcheries has become extraordinarily widespread, and, what is more, as first shown by Plehn in 1902, in Bavaria, these tumours may eventually infiltrate the surrounding tissue and take on definite, cancerous characters. But in the early stages we deal with merely a simple hypertrophy of the gland. It has been shown very clearly by Marine, that here again the water is to blame. In making a hatchery some clear brook is chosen and its water passes through a series of tanks containing the fry. The disease does not show itself in the upper tanks in which the water is fresh, but becomes progressively more and more marked in the lower tanks. Here with fish we find parallel phenomena: the condition does not show itself where abundant fresh water is afforded, and when the affected fish are transferred to other and healthy brooks the tumours disappear. Evidently we deal with a very interesting borderline condition between simple, functional enlargement and tumour formation.

TYPHOID FEVER IN CANADA

THE frequent epidemics of typhoid throughout Canada, and particularly in those cities drawing their water supply from rivers and the Great Lakes, keep clear an already well-known fact; namely, that no serious attempt has been

made to deal effectively with the pollution of the country's water supply. The time is now past for explaining the danger that lies in pouring raw sewage into lake and river, and trusting to nature to transform its filth and render harmless its disease-producing organisms. The public is quite aware of this danger, perhaps not so apathetically as might seem.

It is only when such figures are examined as are grouped together by Dr. Chas. H. Hodgetts, in a pamphlet issued by the Commission of Conservation, and entitled, "An Address on Pure Water and the Pollution of Waterways," that the prevalence of typhoid in Canada is brought home. If it be remembered that a continued typhoid death rate of over twenty per one hundred thousand is an indication that the public water supply is greatly at fault, the significance of the following figures will be apparent. In Edmonton, from 1901-1909, the death rate from typhoid fever per one hundred thousand of population, was: 75.4, 20.0, 32.3, 37.5, 40.0, 254.3, 180.0, 110.0, 76.0. In Winnipeg the rate was: 118.3, 95.0, 82.8, 248.3, 175.0, 108.8, 49.2, 40.5, 38.4. The figures are not to be obtained during all of these years for Fort William, but such as are given disclose the following state: 88.6, 200.2, 132.6, 946.9, 98.5, 94.0. In the province of Quebec, the highest rates, in the cities quoted, are those given for Sherbrooke: 476.6, 227.0, 60.8, 60.8, 30.7, 52.3, 21.6, 108.0, 131.4, 78.4. Of the two largest cities fronting on the chain of the Great Lakes and the St. Lawrence, Toronto has a comparatively low rate, though during the years 1906-1909, the figures have risen to 24.8, 19.4, 19.8, 25.7. During 1900-1909, the rates for Montreal were: 42.6, 44.4, 30.9, 31.4, 31.8, 18.1, 37.0, 33.2, 33.1, 53.8.

These figures have been selected as showing the highest rates. Other cities, such as Vancouver, Victoria, Hamilton, Quebec, Halifax (only one year, 1909, is quoted, when the rate was 4.0), and Charlottetown, have figures, as a rule, well under the twenty per cent. danger mark. It would be interesting and valuable if Dr. Hodgetts would collect information showing

in the case of each city mentioned how its water supply is obtained, and what precautions are taken to prevent pollution.

If, now, the chief cities of the United States which border on the Great Lakes be considered, it will be found that the death rates from typhoid are consecutively higher, and vary less, than those of the cities quoted for Canada. Niagara Falls, from 1900-1908, has the following high rates: 107·9, 143·9, 130·4, 126·9, 139·8, 181·6, 147·3, 126·8, 98·0, and Sault Ste. Marie has: 132·9, 92·9, 272·9, 115·9, 52·4, 68·6, 58·9, 16·5, 72·9. Of the twelve quoted, only two, and those curiously enough, Chicago and Milwaukee, have rates which would suggest care and supervision of a water supply. Two deductions may be drawn: the Great Lakes and the St. Lawrence have become a menace to those cities that are compelled to take their water supply from them; these cities are not taking precautions to make reasonably safe for use their drinking water.

The figures quoted above stand out more boldly when they are contrasted with those showing the rate per one hundred thousand in Scotland, England and Wales, and Germany, countries vastly more populated than Canada, but in which the keeping of public bodies of water free from pollution is regarded as one of the main efforts of public health administration. During the years 1901-1905, the rates in these countries were as follows: Scotland, 6·2, England and Wales, 11·2, Germany, 7·6. Even Belgium, 16·8, Austria, 19·9, Hungary, 28·3, and Italy, 35·2, have lower rates than Canada, which according to the 1901 census had a rate of 35·5. With their one hundred and seventy-eight millions of people, and with all the accompanying poverty, the typhoid rate in none of these European countries is as great as is that of Canada.

What has been brought about in the way of reform in Great Britain has not been the result of a day. It was not until 1858 that pollution was prohibited in England. In 1861 an Act was passed requiring sewage to be purified and freed from fæcal and other putrescible matters before being dis-

charged into streams. From then until to-day, the question has been dealt with by many Acts, and considered by many commissions, and although all difficulties have not yet been overcome, one most important precaution has been taken; namely, the purifying of the whole of the sewage before discharging it into any water course.

In Canada, the matter is complicated by the fact that many of the sources of water supply are not only inter-provincial, but also international. The Great Lakes, for example, receive a portion of their waters from Minnesota, Michigan, Ohio, New York, Vermont, New Hampshire, and Maine, as well as from the contiguous Canadian provinces. So that to take steps to ensure cleanliness in the water supply of the country will demand that the federal government deal with the matter. The restrictions imposed at present against polluting waterways are largely municipal, and, as such, each community is concerned chiefly with attempting to keep pure its own particular water supply, without considering whether or not the disposal of its sewage will contaminate the supply of others.

The meeting of Dominion and provincial public health representatives with the members of the Committee on Public Health of the Commission of Conservation, which was convened at Ottawa last October, and at which Dr. Hodgetts delivered his address, is an indication that this subject is being considered by public health authorities. If, as Dr. Hodgetts suggested, the Commission on Conservation collect all available data to estimate correctly the character, quantity, and variety of the various pollutions at present existing, and ascertain their exact point of discharge and their bearing upon the present sources of water supply of towns and cities, both near and remote from the point of discharge, an important step will be taken. It will then be for the federal government to deal effectively with the whole matter.

DEATH OF DR. BELL

A SHOCK of surprise and pain has come to the profession by the untimely death of Dr. James Bell, surgeon to the Royal Victoria Hospital, Montreal, which occurred on April 11th. The illness lasted only five days, and the cause of death was appendicitis. On the following day the corporation of his university assembled and passed a resolution of regret, which so well defines the circumstances that we transcribe it from the minutes.

"The Corporation of McGill University here assembled desires to place on record its deep regret at the sudden and untimely death of Dr. James Bell, head of the surgical department of this university, and its recognition of the great loss sustained by the medical faculty and the university at large.

"Throughout his whole professional life Dr. Bell was most intimately associated with this university. After a brilliant career as an undergraduate, he took his degree in 1877, winning the Holmes medal, and after serving in the Montreal General Hospital as house surgeon and as medical superintendent for eight years, for another eight years he was attending surgeon at that hospital, until, in 1894, he received the appointment of surgeon to the Royal Victoria Hospital, then newly opened. This latter position he held until his death. His work as a teacher had been continuous from the time of his first appointment on the staff of the Montreal General Hospital. He attained professorial rank in the medical faculty in 1891, and gained successive promotions until 1907, when, as professor of surgery and clinical surgery, he became the head of the surgical department of the university.

"This Corporation recognizes that his remarkable accuracy as a diagnostician, his wise conservatism in all surgical matters, and his extraordinary skill as an operator, in which he was almost without a peer upon this continent—these,

together with his ability as a clinical instructor, added much to the reputation of McGill University, both at home and abroad. Indefatigable as a worker, conscientious, accurate, and thorough in everything he undertook, he was a most helpful and valued counsellor in all matters pertaining to medical education."

To the association Dr. Bell's death comes very near. He was chairman of the finance committee and conducted all the negotiations which led up to the establishment of the JOURNAL.

TUBERCULOSIS IN NOVA SCOTIA

THE campaign against tuberculosis in Nova Scotia has been notably forwarded by the recent action of the Lunenburg-Queen's Medical Society. This society, feeling that the time had come for fuller measures against this disease, sent out circulars to the medical profession throughout Nova Scotia, asking them to join in petitioning the local government for more financial aid and interest in dealing with the problem of tuberculosis. On March 30th, a delegation from this society, consisting of the president, Dr. W. N. Cochran, the secretary, Dr. L. T. W. Penney, and Dr. W. H. Macdonald, accompanied by a number of Halifax physicians, waited upon the Nova Scotia government, and presented a memorial signed by over one hundred and forty doctors from all parts of the province. The memorial expressed the confidence of the medical profession in the present management of the Provincial Sanatorium at Kentville, and asked that its accommodation and equipment be increased. The deputation also urged upon the government the need of homes for the accommodation of the poor of the province that are sick with incurable tuberculosis.

It is encouraging to learn that the deputation received very favourable consideration from the government, and that

during the coming summer the Provincial Sanatorium will be enlarged and better equipped. It is understood that legislation will be introduced at the next session for the building of municipally-maintained homes for the care of the tubercular poor of the province. The action of the Lunenburg-Queen's Medical Society is one which might well be followed by other societies throughout the various provinces.

THE GENERAL PRACTITIONER

A JOURNAL which is content to publish papers which emanate from the laboratory of a medical school, or the clinic of a general hospital, reflects very inadequately the medicine of a country so varied as Canada. In the *Western Medical News* for January, Dr. R. Woods, of Leduc, Alberta, cites the case of a patient whom he was called upon to attend, and he addresses the pointed enquiry to the profession at large: "How would you conduct this case alone and single-handed, fifty miles from assistance and nothing but foreign-speaking people to irritate you by talking and saying nothing you could understand?" The case in question was that of a woman whom he delivered successfully of a hydrocephalic child with "a head about the size of a six year old boy's." Dr. Woods resorted to the expedient of applying the long forceps to the head, clamping them tight and tying them. Then he "allowed the labour to continue without further interference. Head with forceps clamped on was delivered after about three hours' time." We should like to address another enquiry to the profession: "What better could the most expert obstetrician have done?"

In the same communication Dr. Woods cites another successful case in which, after forty-eight hours, the cord was prolapsed and pulseless, the sac was destroyed, the face presented, and a large head was driven firmly into the brim of the pelvis. The patient had had for twenty-four hours the

services of an amateur midwife, but according to Dr. Woods' account they were not very valuable: "She ruptured the sac with a large pair of scissors, and then, feeling something high above the brim, she pulled on it a little."

Such a relation as Dr. Woods makes is of incalculable value, since it gives to the universities a fresh apprehension of the difficulties which their graduates have to cope with, and to teachers a new incentive for sound instruction and thorough training.

THE HARVEY SOCIETY

THE arrival of the annual volume of the Harvey Society suggests the possibility of establishing such a society in Canada. Here, as in the United States, there are two kinds of medical societies. The one is devoted chiefly to clinical work, the other to experimental research. The Harvey Society was established to serve those who were busy with the art and practice of medicine, by presenting to them through the medium of public lectures the results which have been obtained in the laboratory.

The record of research is contained in special journals, and is often of so minute and technical a character that the practitioner has neither time nor opportunity to acquaint himself with it. This society was founded in 1905 in New York, by Professor Graham Lusk, to arrange for lectures upon the experimental side of medicine by men who spend their time within the laboratories. During the first year there were thirteen such lectures, and amongst the speakers were Hans Meyer, Carl von Noorden, Lewellys Barker, Theobald Smith, and Clarence Webster.

Last year eight subjects of importance were presented. Amongst them were the problems of experimental nephritis by R. M. Pearce, and a new theory of renal activity by T. G. Brodie, of Toronto. Two of the lecturers were Europeans;

namely, Otto Cohnheim, of Heidelberg, and A. Magnus-Levy, from Berlin. The others were Carl Huber, Eugene Opie, and Adolf Meyer. Until such a society has a beginning in Canada the various medical associations might well enrich their meetings with more addresses from laboratory workers, even if it meant the limitation of the time spent upon reports of clinical work. The "Harvey Lectures" may be had from Messrs. Lippincott.

ONTARIO MEDICO-POLITICS

NOW that the session of the Ontario provincial legislature is over, things have quieted down in the medical world, and all are waiting to see what the next move of the Medical Council will be. It is suggested that it will in all probability endeavour to square itself with the public and initiate reforms too long delayed. The failure of the government to make the radical changes asked for in the "University Bill," was not overlooked by those who know the personnel of the cabinet, and it is evident that the question assumed a political importance not anticipated at one time. The subject is not dead, and the solution of the difficulty may be found in the appointment of a medical commission, as in Ontario they seem to adopt the commission idea as the simplest method of getting over any difficulty.

The premier apparently recognizes the fact that there are wrongs to right, and if he is once convinced that the situation is serious, he will act promptly; but the difficulty is in getting him to view medical questions from the standpoint of medicine. His attitude in regard to tuberculosis did not excite the admiration of the world of medicine; and the fact that he recently presided at a Christian Science meeting has excited some comment. Possibly it was a case of political exigency.

Now that Dominion registration is in sight it will be

interesting to learn how anxious Ontario really is to become one of the confederation. The medical student is naturally anxious for its immediate development, and if it results in the establishment of a central examining body, independent of the provincial councils, such a change will be welcomed by many. What the attitude of the Medical Council will be is another question; especially if it believes that it will prevent students from appearing before it for examination.

Medical inspection of Toronto schools is a step in the right direction; let us hope that the best qualified persons will be found for the positions. Very special qualifications and training are required, particularly in dealing with the finer sides of the question. The experiment will be watched with interest.

CREMATION

CREMATION was the subject of a paper read at a recent meeting of the Winnipeg Medical Association by Dr. E. S. Moorehead. The figures presented by Dr. Moorehead show that, while cremation has not, as yet, impressed itself to any extent upon the public mind as a substitute for interment, there has been a steady increase in the number adopting this method. In England, the number in 1885 was three; in 1909, it was 855; in Germany, in 1908, there were 4,050 cremations; and in such centres as Chicago and New York City, about one per cent. of those dying in 1910 were disposed of in this manner. Some of the names taken from the lists of the English Cremation Society are the following: Grant Allen, Dr. Bernardo, Edna Lyall, Guy du Maurier, Sir Isaac Pitman, Lady Grey, Sir Spencer Wells, George Meredith, Sims Reeves, W. E. Lecky, Sir Henry Irving.

While many will agree with Dr. Moorehead that cremation is a "nicer, cleaner, and certainly more rapid means of disposal of human remains than is in vogue at the present day," earth-burial is so much a part and parcel

of the custom and sentiment of the people that any wide change must be the matter of many years. And yet that is no reason why a change should not be advocated if it be proved that the present method is a dangerous one; time and custom have robbed it of all other baseness. That earth-burial is not without its dangers is clear from the familiar "Brazilian minister" case investigated by Pasteur. Even after two years the buried anthrax spores had not lost their vitality and were capable of transmitting, and did transmit, disease. Where death results from infectious disease, cremation is clearly the safer and more hygienic method, and in times of pestilence, such as is now in China, very necessary. In crowded centres, too, this method, as Dr. Moorehead has well observed, must commend itself more and more, and city dwellers might with advantage be made familiar with the idea and method.

THE press despatches which appeared at the time the "Roddick Bill" was under consideration at Ottawa, did some injustice to the profession in Saskatchewan. It was made to appear that the opposition in that province was so strong that the Bill should not be reported. From the *Western Medical News* and from private information we are glad to learn that "it is well known that a very large majority of the profession in Saskatchewan is favourable to the Roddick Bill." It is a matter for congratulation that the Bill has now been passed into law with the full consent and approval not only of a majority but of all the provinces.

IN the *Public Health Journal* for March, Dr. G. D. Porter shows by chart the death rate from tuberculosis in Ontario during the decade, 1899-1908. It is interesting to note that in that period the death rate in this province fell

from 1.4 per 1,000 living estimated population, or 11.8 per cent. of the total deaths, in 1899, to 1.1 per 1,000, or 7.6 per cent. of total deaths, in 1909. As Dr. Porter points out, in 1899 there was only one institution in the province for the treatment of tuberculosis; now there are twelve, and in addition, five dispensaries and an increasing number of visiting nurses. It is such figures as these that should form the clearest argument for provincial and municipal aid in the campaign against this disease.

IT appears that a certain amount of dissatisfaction has been expressed by members of the Association who attended the Toronto meeting of last year, to the effect that having paid their membership fee of five dollars in June, 1910, they were asked in January, 1911, to pay a further five dollars. They had assumed that the five dollar fee included the subscription price of the JOURNAL of the Association, which was about to be published, and when it did not appear until January, 1911, they further assumed that they should receive the JOURNAL until June, 1911. To those who have expressed this sense of dissatisfaction, and to others who perhaps have felt it without expressing it, the finance committee desires to offer a word of explanation and to add a word of apology.

The fee of five dollars paid in June, 1910, was the membership fee of the Association for the calendar year January to December, 1910. This fee carried with it the right to receive the JOURNAL of the Association when it should appear. It was hoped that it would appear shortly. That it did not until January, 1911, was unfortunate, but unavoidable. The work of the finance committee in getting the JOURNAL established was a long one. Many questions arose in the course of the negotiations, which had to be submitted to the scattered members of the committee from St. John to Vancouver, involving prolonged correspondence. Thus it happened that when the

JOURNAL ultimately appeared the new calendar year of the Association had begun, and the membership fee for the year 1911 had fallen due. In the past it has been customary to collect this fee only from members of the Association actually present at the annual meeting in the summer. But now that the JOURNAL has become established, and its subscription price has been included in the fee of membership, it has become necessary, or at least advisable, to collect the membership fee in the first month of each year. Those who paid five dollars in Toronto last year would have received the JOURNAL as their right during 1910 if it had been possible to bring it out. They now pay the membership fee for 1911 in January instead of in June, and receive the JOURNAL included. They are members of the Association whether they attend the annual meeting or not, and continue to be members from year to year, unless they send in their resignations. The subscription price of the JOURNAL to non-members is still five dollars.

Book Reviews

BISMUTH PASTE IN CHRONIC SUPPURATIONS, ITS DIAGNOSTIC IMPORTANCE AND THERAPEUTIC VALUE. By EMIL G. BECK, M.D., Surgeon to the North Chicago Hospital. With eighty-one engravings, nine diagrammatic illustrations, and a coloured plate. St. Louis, C. V. Mosby Company, 1910. Price, \$2.50.

This is a monograph upon one subject, and a very thorough piece of work at that. In the introduction Carl Beck says that by observing the favourable results obtained by the use of bismuth in the diagnosis of pathological conditions in the stomach he was induced to apply the method to make bone lesion distinct in the picture, and to follow suppurative conditions to the focus of their origin. He next observed that improvement followed upon this procedure, which was undertaken originally merely for diagnostic purposes. The method has had a fair trial by Dr. Carl Beck, Dr. M. L. Beck, Dr. Joseph Beck, Dr. Ochsner, and Dr. Mayo, and this monograph is the result of their experience. The book cites many instances in which errors of diagnosis have been revealed by the method, and Dr. Beck goes so far as to say that he would regard any operation on the fistula, or bone lesion with fistula, without the previous use of bismuth injection, as a mistake. The book does what it sets out to do; namely, to furnish a record by which surgeons can employ the method with their own hands. We feel sure that the evidence here presented is sufficiently strong to induce surgeons generally to make a trial of this new procedure.

A MANUAL OF PHYSICAL DIAGNOSIS. By BREFNEY ROLPH O'REILLY, M.D., Demonstrator in Clinical Medicine and in Pathology, University of Toronto. With six plates and forty-nine other illustrations. Philadelphia, P. Blackiston's Son & Co. 1911. Price, \$2.00.

The dedication to this book is so interesting that we transcribe it: "To the memory of JOHN O'REILLY, Surgeon in Ordinary to the households of their Majesties King George IV and King William IV. Died at Windsor, England, A.D. 1833, and of the Honourable JOHN ROLPH, M.A., LL.D., M.R.C.S. Eng., founder of medical education in Upper Canada, Dean of 'Rolph's School of Medicine,' and of the 'Toronto School of Medicine,' from A.D. 1853-1870. Member of the Honourable Society of the Inner Temple, London, England. Member

of the Legislative Executive Council of Upper Canada, A.D. 1835. Died, A.D. 1870."

In this book of nearly 400 pages the author has made a successful attempt to emphasize, for the use of students, the various physical methods employed in the diagnosis of a medical case and to explain the origin and clinical significance of those methods. The author has brought together in small compass and easily accessible form much information on physical diagnosis. The book is likely to appeal to students, and is entirely creditable to the author and to the University of Toronto, in which he is a teacher.

LEHRBUCH DER SPEZIELLEN PATHOLOGISCHEN ANATOMIE FÜR STUDIRENDE UND ARZTE. By DR. EDUARD KAUFMANN, Professor of Pathological Anatomy in the University of Göttingen. Fifth revised edition. Georg Reimer: Berlin, 1910.

Text-books may be divided broadly into two orders, according to the attitude of mind of the writer,—those written down to the student and those written up to the present status of the subject. The best of both orders fulfil their purposes. Books of the first class are, honestly, useful only for the consumption of the ordinary student, and stand or fall according as they present what is essential for a general knowledge in a clear and fairly concentrated form. The latter is the rarer type, and is not to be judged by popularity among the student class (although the better students will be found to choose works of this rather than of the former order), but by popularity among teachers and workers. A few years ago, when the author was alive and publishing rapidly succeeding editions, Ziegler's Pathology was the familiar handbook of every pathologist. We refer here to the original German edition with its valuable bibliographical lists, not to the abbreviated American edition. To-day, what is preëminently the pathologist's special pathology is the work before us. Like Ziegler's it is written from the point of view of pathological anatomy; like Ziegler's it exhibits an extraordinary knowledge and timely selection of the literature of the subject, but it is fuller and, at the same time, more concise, and, for non-German readers at least, clearer in its style. Appalling as is the mass of literature to-day upon medical science, what between the latest edition of Kaufmann, the yearly volumes of Lubarsch and Ostertag's *Ergebnisse* and, we would add, the *Verhandlungen* of the Deutsche Pathologische Gesellschaft, it still remains possible for the worker in pathological anatomy to follow closely the development of his science: that is to say, not to be much more than a year behind.

Books Received

FORMULAIRE DES MEDICAMENTS NOUVEAUX, pour 1911. By H. Bocquillon-Limousin, Doctor of Pharmacy of the University of Paris. Pp. 400. 3 frs. Librairie J.-B. Baillière et Fils, 19, rue Hautefeuille, Paris.

AN INDEX OF SYMPTOMS: WITH DIAGNOSTIC METHODS. By Ralph Winnington Leftwich, M.D., Late Assistant Physician to the East London Children's Hospital. Fourth Edition, in pocket book form; pp. 451; 7s. 6d. net. London: Smith, Elder & Co., 15, Waterloo Place, 1910.

PUBLICATIONS OF THE MASSACHUSETTS GENERAL HOSPITAL, BOSTON, October, 1910. Medical and Surgical Papers, pp. 374. Boston: The Barta Press, 28 Oliver St.

TRANSACTIONS OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS. Eighth triennial session, held at Washington, D.C., May 3rd and 4th, 1910. Pp. 456. Published by the Congress, New Haven, Conn., 1910.

RADIUM: ITS PHYSICS AND THERAPEUTICS. By Dawson Turner, F.R.C.P. Edin., M.R.C.P. Lond., F.R.S. Edin. Pp. 86; illustrations, 27, plates, 12; 5s. net. London: Baillière, Tindall and Cox, 8, Henrietta St., Covent Garden, 1911.

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY. By L. Bathe Rawling, M.B., B.C. Cant., F.R.C.S. Eng. Fourth Edition. 96 pages; 29 plates. 5s. net. London: H. K. Lewis, 136, Gower St., 1911.

PUBLIC HEALTH LABORATORY WORK. By Henry R. Kenwood, M.B., F.R.S. Edin. Fifth Edition. 446 pages; with illustrations. 10s. net. London: H. K. Lewis, 136, Gower St., 1911.

HYGIENE AND PUBLIC HEALTH. By Louis C. Parkes, M.D., D.P.H. Univ. of Lond., and Henry R. Kenwood, M.B., F.R.S. Edin., D.P.H. Lond. Fourth Edition. 691 pages. 12s. 6d. net. London: H. K. Lewis, 136, Gower St., 1911.

Res Judicata

PNEUMONIA has probably been the object of more systems of treatment than any other disease, and yet, with all the accumulated experience of centuries, one is inclined to agree with Professor Osler, that our results of treatment are probably no better than were those of Hippocrates. The statistical method of recording results was not born until long after the time of the father of medicine, but still Professor Osler's cynical statement has in it the elements of truth and is indeed humbling. Yet surely we have improved upon the days when pneumonia cases were routinely bled and given heroic doses of tartar emetic and purged to depletion, as they were, probably, not in the days of Hippocrates, but rather in the more recent and violent days of the later centuries. Certain principles, at any rate, have been recognized within recent years, which must tend to the patient's good. In the first place, it is only within the last half century or so that the fact has been recognized that most cases of pneumonia tend to get better of themselves, and this knowledge of itself is a long step forward in the therapy of the disease. Appreciating, as we now do, that Nature uses certain weapons in ridding the body of the invader, the careful study of these weapons by which the disease is made, as it is termed, "self-limiting,"—in other words, the study of immunity—is engaging the best minds everywhere, always with the object of finding out how we may best aid these natural means. So far the actual outcome of these studies has been small, and the use of various vaccines and sera have not produced brilliant results, but it is surely only a matter of time until discoveries will be made in this field which will enable us to meet pneumonia with the same scientific methods that have decimated the mortality of diphtheria and cerebro-spinal meningitis.

In the meantime, the physician realizes that when he watches a sufferer from pneumonia he is witness of a struggle in which the *vis medicatrix naturæ* is making it probable that the craft will weather the pneumonic storm that threatens it. But is his care to be limited to that of being a mere spectator? Far from it. Nevertheless, in the first place, he needs must realize his relative helplessness in directly attacking the infection itself, and must carefully avoid doing anything that will in any way lessen the forces which are carrying on the defence. Hence the modern tendency to avoid the use of powerful, and often weakening, drugs, such as tartar emetic, indiscriminate bleeding, and

all the other harsh means which cannot directly affect the invader and may depress the invaded. The modern practitioner rather directs his treatment to sustaining, in every way, the body in its fight,—husbanding the strength, keeping up the nutrition, aiding the elimination, and, occasionally, when the necessity arises, using remedies to sustain and stimulate those organs which are tending to be overcome in the struggle. In other words, the modern therapy of pneumonia is mainly directed to sustaining the patient's powers in every possible way, and treating any special symptoms which threaten to become in themselves a danger.

First comes the careful and skilled nursing of the patient, so that his strength may be husbanded in a hundred little ways. The physician now no longer fears the effects of cold air, and the fresh air treatment has been much used, apparently with the best results. Instead of the patient being kept in a warm and often stuffy room, he is placed in one in which the windows are kept widely open, even, in many cases, in the coldest days of winter; often the bed is placed out of doors. In the Toronto General Hospital this latter method has been extensively used in the last few years, and the patients seem to appreciate it, and apparently are benefited. Not only does this method supply pure air, but the cold, acting as a stimulant to the exposed parts of the skin, reflexly raises the blood pressure, and thus one of the greatest dangers of the disease, a low blood pressure, is directly met. Of course, the fresh air treatment must be used with common sense, draughts being checked and the patient being sufficiently covered to avoid the chilling of the extremities. Also the nurse and the physician must be careful not to too freely expose the body when attending to, or examining, the patient. In the writer's opinion, cases complicated by or complicating bronchitis should be exposed to cold air with much less freedom than those suffering from pure lobar pneumonia.

The value of keeping the patient well nourished cannot be too much emphasized, and the great thirst, which is so often present, should be freely assuaged by copious draughts of water. The retention of the chlorides, which is such a marked feature of the disease, probably increases this desire for fluids, although with what object is not clear, unless it be for the lessening of toxæmia. The use of alcohol, once so universal, has much gone out as a routine method, and many never use it, while others reserve it for the asthenia of the last few days before the crisis. Most authorities use it freely in those cases that have previously been addicted to it to excess. When an alcoholic is in the throes of pneumonia is no time to reform him.

In the great majority of cases it is now recognized that having put

the patient in the best possible environment and taking care to keep up his nutrition, little more is required. The routine use of expectorants, once such a constant feature in the treatment, has passed into oblivion. But many patients do not run a favourable course, and in such, by a careful study of the condition, it is often possible to recognize in what special way the fight is going badly, and then by some appropriate treatment to assist nature.

The area of lung involved is seldom a matter of much moment, often those cases in which little pulmonary tissue seems to be consolidated being more profoundly ill than those in which it is extensively solid. It is the amount of toxæmia, rather than the extent of lung attacked, that affects the prognosis. The circulation is especially apt to suffer from this poisoning, and the routine measurement of the blood pressure in pneumonia has been of great value recently in watching for this serious complication. Dr. G. A. Gibson, about two years ago, drew attention to the fact, which has since been amply confirmed, that when the blood pressure in millimetres of mercury is persistently lower than the pulse rate per minute, the case is serious and the prognosis bad. What used to be looked upon as heart failure in pneumonia is now considered rather as a general, circulatory weakening, although, of course, the heart participates in the general poisoning. Hence the importance of using, in such cases, vaso-motor stimulants, such as caffeine, strychnine, and atropine, and, in emergencies, even adrenaline. Where, however, the heart seems to be specially involved, as shown by the weakening of the first sound and dilatation of the cavities, with perhaps cyanosis, digitalis is of value, although, as pointed out by Dr. James Mackenzie, this drug is not the powerful weapon in heart failure due to toxæmia that it is where we have a healthy, heart muscle yielding under the strain of some valve lesion. Bleeding, which was at one time so universal and then went almost completely out of favour, is again gaining ground, and where there is cyanosis is often a powerful weapon for good. Last year Schrøder, of Copenhagen, showed by experimental work how the removal of blood tends to increase the production of various anti-bodies in typhoid fever, and probably it acts similarly in most infections, and if so we have a happy confirmation of an old empirical method. Further, bleeding directly removes toxins, so in every way, in selected cases, it may be of value.

The direct treatment of the fever is not often attempted nowadays, although when this becomes excessive, and so may be a source of danger, it is generally controlled by hydropathy. Many physicians, however, use quinine here, and recently H. L. Smith has shown that this drug directly raises the opsonic index in pneumonia, and hence strengthens

one of the weapons in the fight. Delirium and sleeplessness are frequently serious threateners of the patient's strength, and must be met by non-depressing sedatives, such as the bromides, veronal, and paraldehyde, and, if these are not effectual, by morphia. It was a good old clinical rule never to allow a pneumonia to have three successive bad nights, and although many fear morphia here, it has, in the hands of others, appeared to be life saving.

The object of this brief review has been to point out the general trend of modern opinion in the care of patients suffering from pneumonia. As has been said, we await with hope the results that will surely come from the study of immunity in this disease as in others, and until such specific help arrives we must be content to sustain our patients in every way during their struggle back to health and to treat such symptoms as seem to threaten them during the fight.

Retrospect of Medicine

THE SIGNIFICANCE OF ROENTGEN EXAMINATION FOR THE DIAGNOSIS OF CARCINOMA OF THE STOMACH, FAULHABER, *Deut. Arch. Klin. Med. Bd.* 101, p. 177.

FAULHABER discusses the value of the Roentgen rays in the diagnosis of cancer of the stomach, basing his article on eighty-six cases personally observed.

The bismuth meal was used in most cases, but zirkon oxide also gave good results. The presence of a tumour is, for the most part, recognized by a defect in the filling of the organ. In the pylorus, the most frequent site of the growth, interference with the regular peristalsis is a sign of much value, particularly as this region varies considerably in site, form, and size in different individuals. Very small growths are not likely to be detected, but it is probable that a growth the size of a walnut might be observed. The smallest tumour observed by the author was four to five cm. in diameter.

In all cases, when a clinical diagnosis was possible, the Roentgen examination gave a positive result. There is the further advantage of localizing the growth and of estimating its extent. A palpable tumour of the stomach may have its site on very different portions of the organ, and its exact position, whether in the smaller curvature, or pylorus, or elsewhere, can be accurately determined only by the Roentgen method.

The great advantage of the examination is best seen in a comparison of cases in which the clinical diagnosis is doubtful, thirty-one per cent. of the writer's cases falling in this class. Even when the usual evidence of the disease is present, the absence of a palpable tumour is frequently an important lack in the evidence, for it is indeed the most important of all the clinical signs. It is just in these cases that the Röntgen examination proves most useful. When the site of the growth is indicated by the skiagram, the observer is often able to palpate it, or the mass can be felt when standing, or on forced inspiration.

In 14.3 per cent. of his cases, the observer was able to make out the presence of tumour when his touch was aided by the additional information obtained by the picture of the growth. In a larger number of cases, 30.4 per cent., a growth was detected when it proved impossible to feel one. This observation certainly establishes the Röntgen method as of high value, the presence of a tumour being proved when it could be recognized in no other way.

Growths at the pylorus can almost always be palpated, but when the mass is not so favourably situated this procedure often proves impossible. In cases of general contraction of the organ from cancerous infiltration, in growths of the fundus, in tumours of the pars media, overlapped by the liver, and even in pyloric growths concealed by an enlarged liver, the skiagram gives positive information, and enables the observer to recognize definitely the presence of a growth.

The extent and site of the tumour are useful data in determining the advisability of operation, and even more frequently in indicating the non-operability of a given case. Small growths at the pylorus, not adherent to surrounding structures, are the most favourable for medical operation, and the recognition of the existence of such conditions is materially aided by the results of the Röntgen picture. Negative findings are often valuable when abdominal tumours lie in the neighbourhood of the stomach. It is often possible to show that they are not connected with this organ, and again there are sometimes symptoms highly suggestive of gastric carcinoma in which this condition can be positively excluded. A series of diagrams of the Röntgen pictures accompanies this review.

The Canadian Medical Association

ANNUAL MEETING, MONTREAL, JUNE 7TH, 8TH, AND 9TH

PROVISIONAL PROGRAMME

FIRST DAY, JUNE 7TH, WEDNESDAY

9 A.M. Registration, payment of fees, and meeting of executive council.

10.30 A.M. General meeting; installation of president. (1) Calling meeting to order by president. (2) Prayer designated by the president. (3) Address of welcome and response. (4) Report of chairman of committee of arrangements. (5) Reading of minutes of last general session. (6) Report of general secretary of last general meeting. (7) Election of the Association's members to the executive council. (8) Meeting of executive council.

1 P.M. Luncheon in new medical building.

7 P.M. Sections of medicine, surgery, obstetrics and gynaecology, laboratory workers, ophthalmology and oto-laryngology, preventive medicine.

9 P.M. Smoker, in the Victoria Rifles Armoury.

SECOND DAY, JUNE 8TH, THURSDAY

9 A.M. Meetings of sections.

1 P.M. Luncheon.

2 P.M. Combined sections: (1) President's address; (2) Address in surgery, Alex. Primrose, Toronto; (3) Paper, W. J. Mayo, Rochester, Minn.

8.30 P.M. Address in Medicine, in the Royal Victoria College, Sir James Barr, Liverpool.

THIRD DAY, JUNE 9TH, FRIDAY

9 A.M. Meetings of sections.

1 P.M. Luncheon.

2 P.M. Sections.

3.30 P.M. Visit to McDonald Agricultural College, at St. Anne.

SECTION OF MEDICINE

Papers have been promised as follows: 1. "Treatment of Pulmonary Tuberculosis," J. Roddick Byers, Ste. Agathe des Monts.

2. "Tuberculosis," R. C. Paterson, Ste. Agathe des Monts. 3. "Prevention of Insanity," W. H. Hattie, Halifax. 4. "Some recent Work in the Diagnosis of Hemiplegia," Ernest Jones, Toronto. 5. Paper, D. A. Shirres, Montreal. 6. Paper, C. A. Peters, Montreal. Symposium on acute poliomyelitis. Conjoint session, with section of preventive medicine on water supply and its relation to disease. 7. "Railways and Typhoid," R. F. Thornton, Deloraine, Man.

SECTION OF SURGERY

Papers have been promised as follows: 1. "Diagnosis and Surgical Indications of Duodenal Ulcer," James Taft Pilcher, Brooklyn, New York. 2. "Renal Calculus: a Consideration of the Newer Methods of Diagnosis and Operative Treatment," (with lantern slides), Paul M. Pilcher, A.M., Brooklyn, New York. 3. "Tumours of the Bladder," Wm. Hutchinson, Montreal. 4. "606," R. P. Campbell, Montreal. 5. "Spinal Anæsthesia," J. M. Elder, Montreal. 6. Paper, F. J. Shepherd, Montreal. 7. "Surgical Treatment of Empyema and Abscess of the Lung," E. M. von Eberts, Montreal. 8. Paper, E. W. Archibald, Montreal. 9. "Operative Myxœdema in Monkeys," J. H. Halpenny, Winnipeg, Man. 10. Paper, E. MacKenzie Forbes, Montreal. 11. Paper, J. Alex. Hutchison, Montreal. 12. "Injuries of the Cord without Damage to the Spine," Chas. E. Wilson, Toronto.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION

Symposium, "Temperature in the Puerperium," (1) *Ætiology*, H. M. Little; (2) *Diagnosis*, E. A. E. de Cotret; (3) *Treatment*.

Symposium, "Uterine Displacements," (1) *Ætiology and pathology*, F. A. Clelland; (2) *Symptoms and complications*, W. W. Chipman; (3) *Treatment*, F. A. L. Lockhart.

Original papers: "Common Mistakes in Gynæcological Diagnosis," Wm. Gardner, Montreal; "Prolonged Pregnancy," Adam Wright, Toronto; Paper, John Clarke, Philadelphia; Paper, H. A. Kelly, Baltimore; Paper, J. C. Webster, Chicago; "Tuberculosis of Urethra with Specimen," F. A. L. Lockhart, Montreal; "Advances in Obstetrics in the last Twenty-five Years," A. Laphorn Smith, Montreal; Paper, H. M. Vineburg, New York; Paper, E. S. Maynard, Burlington; "Practical Points in Abdominal and Pelvic Diagnosis," E. M. Hay, Toronto; "Sequelæ of Abortion from Gynæcological Point of View," L. de L. Harwood, Montreal; Paper, J. C. Goodall, Montreal; Paper, F. W. Marlow, Toronto. "Cancer of the Uterus," W. W. Chipman, Montreal. "Eclampsia," H. L. Reddy, Montreal. "Reattachment of the Ligaments in Complete and Incomplete Hysterectomy," Samuel T. Maynard.

SECTION OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Papers have been promised as follows: 1. "Glaucoma," Casey Wood, Chicago. 2. Paper, J. P. McKernon, New York. 3. Paper, W. G. M. Byers, Montreal. 4. Paper, G. H. Mathewson, Montreal. 5. (a) "Possibilities of Infecting Intraocular Operations by means of the Hair"; (b) "Inefficacy of Intraocular Use of Iodoform in Tuberculous Iritis"; (c) Pathological Sections, F. T. Tooke, Montreal. 6. Paper, S. H. McKee, Montreal. 7. Living Cases, R. H. Craig, Montreal. 8. "Treatment of Tinnitus Aurium," A. W. Mayberry, Toronto. 9. Paper, C. W. McCullough, Fort William. 10. Paper, H. S. Muckleston, Montreal.

SECTION OF LABORATORY WORKERS

(Announcement later.)

SECTION OF PREVENTIVE MEDICINE

(Announcement later.)

A large number of papers in addition to those announced in this provisional programme are expected. A series of entertainments has been arranged, and a ladies' committee has been formed to look after the entertainment of the wives of members and other lady visitors.

The usual arrangements for tickets have been made, members intending to be present purchasing a one-way, first-class ticket to Montreal, at the same time securing a standard certificate of such purchase signed by the ticket agent. These certificates must also be signed by a special agent who will be in attendance in the administrative building set apart by McGill on June 8th. Return tickets will be issued only to those who have the standard certificate signed by the ticket agent, countersigned by the secretary of the meeting, and also by the special agent on June 8th, as follows: if forty-nine are present, at two-thirds of one-way, first-class fare; if fifty to two hundred and ninety-nine are present, at one-third fare; if three hundred or more, no charge will be made.

Personal

DR. J. G. FITZGERALD, lecturer in bacteriology in the University of Toronto, has resigned to accept the position of assistant professor of bacteriology in the University of California. Dr. Fitzgerald sails April 15th to spend the spring and early summer in Germany before going to California.

News

THE International Congress of Pathology will hold its annual gathering from October 2nd to 5th, 1911, at Turin. Professor P. Foa, Corso Raffaello 30, Turin, is the secretary.

THE third congress of the International Surgical Association is to be held at Brussels, September 26th to 30th, 1911, with an exhibition of fractures and methods of treatment in addition to the usual exhibition of surgical instruments and appliances. The three subjects to be discussed are surgery of the lungs and pleura, colitis, and pancreatitis. Prof. Depage is the secretary general, 75, Avenue Louise, Brussels, Belgium.

THE third congress of the International Society of Surgery will take place at Brussels from September 26th to 30th. The sessions of the society will be public, but only actual members will be able to take part in the discussions. Three main subjects will be considered; viz., Pleuro-pulmonary Surgery, reported by Drs. Garré (Bonn), Gaudier (Lille), Girard (Geneva), Lenormand (Paris), Ferguson (Chicago), Van Stockum (Rotterdam), Sauerbruch (Marburg), Friedrich (Marburg); Colitis, reported by Drs. Sonnenburg (Berlin), Segond (Paris), Gibson (New York), D'Arcy Power (London); Pancreatitis, reported by Drs. Michel (Nancy), Korte (Berlin), Giordano (Venice). Full particulars may be obtained by addressing the secretary-general of the congress, M. le Professeur Depage, 75, Avenue Louise, Brussels.

THE seventh international congress against tuberculosis will be held in Rome from September 24th to September 30th, 1911. The work of the congress will be distributed among the following sections: (a) ætiology and epidemiology of tuberculosis; (b) pathology and therapeutics (medical and surgical) of tuberculosis; and (c) social defence against tuberculosis. The congress is open to medical men of all nations, and to all who are interested in the discussion of a combined hygienic effort against tuberculosis. Application for membership should be made to the secretary-general, 36, Via in Lucina, Rome, the fee of 25 Italian lire being sent at the same time to the treasurer of the congress at the same address. Special information may be had by forwarding name and address to the secretary-general.

THE third International Laryngo-Rhinological Congress is announced to take place in Berlin from August 30th to September 2nd, under the presidency of Herr Geheimrat B. Frankel. The following are the chief subjects for consideration: (1) The Relations of Experimental Phonetics to Laryngology, reported by Herr Gutzmann, of Berlin, and Herr Struyken, of Breda; (2) Bronchoscopy and Oesophagoscopy, their Indications and Contra-indications, reported by Herr Killian, of Freiburg, Herr Kahler, of Vienna, and Dr. Jackson, of Pittsburg; (3) The Lymphatic System of the Nose and of the Nasopharynx, reported by Herr Brœckart, of Ghent, Sig. Poli, of Genoa, and Mr. Logan Turner, of Edinburgh; (4) The So-called Fibrous Nasopharyngeal Polypus, reported by M. Jacques, of Nancy, and M. Hellat, of St. Petersburg. Further particulars may be obtained from the secretary of the congress, Herr Professor Rosenberg, Schiffbauerdamm, 26, Berlin, N.W.

STATISTICS have been prepared showing the infant mortality in Montreal during the past twenty-five years. The average is high,—no less than twenty-five per cent. During the year 1909, with 14,678 births, there were 3,238 deaths of children under one year of age. Lack of proper knowledge on the part of mothers, overcrowding in various portions of the city, and poor food during the summer months, are given as the cause for the high percentage.

THE annual report of the medical superintendent of the Nova Scotia Hospital (for the insane) for the year ending September 30th, 1910, shows that the year reported upon was characterized by the largest admission rate in the history of the hospital. Altogether 194 patients were received, an increase of 21 over the previous year. In addition, some 30 patients were referred to county asylums. The discharges, exclusive of deaths, numbered 112. There were 55 deaths. The cure rate was the lowest for many years, only 55 of those discharged being classed as having recovered. Based upon admissions, this represents a recovery rate of 28.2 per cent. While no conclusion can be formed from the experience of a single year, the superintendent is of the opinion that there can be no doubt that the tendency is to a progressive increase in the annual number of admissions. The hospital was opened for the reception of patients in 1859, and in the first two years of its existence 132 patients were received. In the decade 1861-1870, an average annual number of 56.2 patients was admitted. In the succeeding decades, the annual average shows steady increase, until in the decade just ended it amounts to 161. The ratio of the annual number

of admissions to the general population of the province is now 1 to 2,852, as contrasted with 1 to 5,887 in the decade 1861-1870. This obtains notwithstanding the recent erection of several county asylums. This may not be sufficient to prove that insanity is becoming more prevalent, but it at least indicates that the number of the insane for whom care is demanded is increasing very rapidly.

THE annual report of the Provincial Hospital (for the insane), St. John, N.B., for the year ending October 31st, 1910, has been issued. The superintendent's report shows: patients in hospital November 1st, 1909, 526; patients admitted, 136; patients discharged, 82; in residence at the end of the year, 531. Compared with the preceding year, there was an increase of six in the number of admissions, an equal number of discharges, a recovery rate higher than the average, a death rate lower, and a daily average number resident twelve more. Since this hospital was established, sixty-four years ago, 7,097 cases have been treated, of whom 2,829 were discharged as recovered; 1,189 as more or less improved; 272, no better than when admitted; and 2,270, less than one-third, died in residence. During the year 1909-1910, of the 136 cases admitted, 104 were new, while 32 had been confined in the institution on one or more previous occasions. The percentage of recoveries during the year, based on admissions and re-admissions, was 42.6. The average age of the 531 patients in hospital November 1st, 1910, was forty-eight years. There were 104 past sixty years, and more than half past fifty. Only 13 were under twenty. The influence of heredity in predisposing to insanity was traced to over 55 per cent. of the cases admitted.

THE annual report of the Alexandra Hospital, Montreal, shows that 820 cases of contagious disease were treated in this institution during the past year, an increase of 165 over the previous year. The number of cases treated to a conclusion was 804, or 126 more than in 1909. The total number of deaths was 47; the percentage of deaths, exclusive of those dying within forty-six hours, being 3.98 per cent., which is the lowest mortality experienced since the hospital was opened. Of the diseases treated, 233 were cases of scarlatina; 227, diphtheria; 210, measles; 63, erysipelas; the balance comprising mixed infections, german measles, and cases which proved non-contagious. Of the religious belief of the patients, 486 were Protestants; 127, Roman Catholics; 132, Hebrews; 4, of the Greek Church, and 71 unknown. The president stated that the large increase in the number of erysipelas cases pointed to the necessity of a new pavilion for the treat-

ment of this disease. By the new contract recently made with the city for the period of five years from January 1st, 1911, the hospital now receives \$35,000 per annum, an increase of \$10,000 over the previous term. This places thirty-five free beds at the disposal of the city, instead of twenty-five as previously agreed upon. The following officers were reelected: president, Dr. T. G. Roddick; vice-presidents, Messrs. C. F. Smith and C. R. Hosmer; treasurer, Mr. Jas. Reid Wilson.

Obituary

DR. WILLIAM McGEACHY, of Iona, Ontario, died March 17th. Dr. McGeachy was born in 1839, in Clark township, Durham county, and graduated in medicine from McGill in 1867. He practised medicine in Iona for about thirty years, when he was compelled by ill health to retire.

DR. CHARLES M. STEWART, of Toronto, was killed Saturday, March 25th, by being thrown by his horse under a car. Dr. Stewart was born at Ailsa Craig, Ont., in 1873. He graduated in medicine from the University of Toronto in 1897, and was house surgeon in the Toronto General Hospital during 1898 and 1899. He then went abroad for three years, where he studied at Edinburgh and London. On his return to Canada he became superintendent of the General Hospital at Ottawa. He later returned to London, where he studied as a specialist in diseases of the ear, nose, and throat. He took up his residence in Toronto three years ago, practising as a specialist. He was unmarried.

DR. SAMUEL T. GREEN, who a few years ago practised medicine in Arnprior, Ont., died March 20th, in Denver, Colorado. Dr. Green was born in Pakenham township, and in addition to practising in Arnprior was, for a time, in Calabogie and Maynooth.

DR. T. D. WHITCHER, of Stanstead county, Quebec, died Sunday, March 19th, of pneumonia. Dr. Whitcher was seventy-one years old, and was one of the best known physicians along the border.

DR. WILLIAM INGLIS BRADLEY, of Ottawa, died March 22nd. Dr.

Bradley was born at Parrsboro, N.S., in 1862, and went to Ottawa when a boy. He received his early education in the public schools of that city, later attending the collegiate institute. He was a graduate of the Arts' class of 1884 of Toronto University, and graduated in medicine from McGill in 1888. While a student at McGill the North-West rebellion broke out, and he went to the front, serving in the Army Medical Corps throughout the rebellion. After leaving college Dr. Bradley was a year at Carleton Place, going from there to Sault Ste. Marie, where he remained for the next few years. In 1895 he went to England, where he obtained the degree of M.R.C.S., and continued his studies abroad for the year and a half following. While abroad Dr. Bradley married Miss Robreche, of St. Malo, France. Returning to Canada, Dr. Bradley took up practice in Montreal, at the same time continuing research work at McGill. In 1900 he went to Ottawa.

Canadian Literature

ORIGINAL COMMUNICATIONS

Dominion Medical Monthly, March, 1911:

- Recent Observations on the Therapeutic Use of
Radium W. H. B. Aikins and F. C. Harrison.

L'Union Médicale du Canada, March, 1911:

- La fondation Carnegie et la faculté de médecine
Laval à Montréal E. P. Lachapelle.
Syphilis tertiaire, guérison par le 606 . . . Alphonse Mercier.
Tumeur intra-cranienne—Sarcome du 3ème
ventricule B. G. Bourgeois.

Le Journal de Médecine et de Chirurgie, March, 1911:

- L'avortement tubaire Eugène Saint-Jacques and
A. Saint-Pierre.
L'indice opsonique E. Z. Ethier.
Des indications de l'urétrotomie interne dans les
retrecissements de l'urètre R. Falardeau.
La fondation Carnegie pour l'avancement de
l'enseignement et la Faculté de Médecine de
l'Université Laval à Montréal . . . E. Saint-Jacques.

The Canadian Practitioner and Review, March, 1911:

- The Treatment of Pneumonia Historically Considered J. H. Elliott.
 Intussusception: Recent Results at the Hospital for Sick Children F. N. G. Starr.
 The Hygienic, Diatetic, and Medical Treatment of Tuberculosis W. J. Dobbie.
 A Case of Pityriasis Rubra Pilaris Graham Chambers.

Le Bulletin Médical de Québec, February, 1911:

- La non-observance de certaines règles de l'hygiène dans les salles publiques Dr. DeVarennnes.
 Quelques travaux récents sur la pancréatite aiguë hémorragique Ch. Lenormant.
 Association de la rougeole et de la scarlatine Professor Hutinel.
 Reéducation de la respiration et de l'attitude droite chez un asthmatique Pierre Gacey.

Le Montréal Médical, March 15th, 1911:

- La maladie hystique de la mamelle est-elle bénigne? Professor Reclus.
 Du pragmatisme en médecine: la thérapeutique pragmatique Louis Rénou.
 Quelques moyens de combattre la grippe Dr. LeCavelier.
 Laënnec et ses contemporains Professor Dénoit.

The Public Health Journal, March, 1911:

- Evolution of Local Public Health: County Officers, P. H. Bryce.
 Transmission of Plague L. W. Sambon.
 Tuberculosis Mortality in Ontario George D. Porter.
 Hygiene in the Home E. L. Coolidge.
 The Purification of Public Water Supplies J. Aird Murray.
 Oral Hygiene Alexander Scott.

The Canada Lancet, April, 1911:

- Graves' Disease H. B. Anderson.
 The Preparation and After-treatment of Head and Neck Surgical Cases Ingersoll Olmstead.
 Before and After Treatment in Pelvic Cases. William Burt.

Medical Societies

CALGARY MEDICAL ASSOCIATION

At a meeting of the Calgary Medical Association, held March 17th, the following officers were elected for the ensuing year: president, Dr. W. E. Graham; vice-president, Dr. George E. Anderson; treasurer, Dr. T. J. Costello; secretary, Dr. Fisher; general committee, Drs. Hackney, McGuffin, and Stewart.

THE OTTAWA MEDICO-CHIRURGICAL SOCIETY

At a meeting of the Ottawa Medico-Chirurgical Society, held Friday, March 17th, the following officers were elected for the ensuing year: honorary president, Sir James Grant; president, Dr. C. H. Brown; first vice-president, Dr. J. D. Courtenay; second vice-president, Dr. J. R. O'Brien; secretary, Dr. T. W. C. Mohr; treasurer, Dr. A. S. McElroy; curator, Dr. W. S. Lyman; librarian, Dr. C. E. Preston; council, Drs. Small, Cousens, Gibson, Argue, and I. G. Smith.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The eleventh regular meeting of the society was held Friday evening, March 3rd.

PATHOLOGICAL SPECIMENS. Dr. O. C. Gruner presented the following:

1. Tuberculosis of the urinary tract, kidneys, ureter, bladder, prostate, etc., with absolutely no sign of tuberculosis in any other part of the body; patient died of uræmia.

2. Liver from a case of carcinoma of the stomach. The whole surface had been gnawed away, due to auto-digestion from the stomach contents through perforation of the stomach wall.

3. Tumour of the ovary, which on microscopical examination showed two distinct structures, sarcoma and papillary carcinoma.

Dr. L. J. Rhea discussed these specimens.

CASE REPORT. Post partum plastics. Two cases of repair of complete lacerations at the time of a subsequent labour. Dr. H. M. Little read the report of these cases.

PAPER. Thoracic Surgery, with a lantern demonstration. Dr. E. M. von Eberts read the paper of the evening, taking up thoracic surgery in general; the experimental—thoracotomy, resection of lung tissue; lobectomy or pneumonectomy and gastro-cesophagostomy; and the clinical—acute empyema, lung abscess. The paper was illustrated by lantern slides showing both experimental and clinical material. Drs. Elder, Garrow, Rhea, and Archibald discussed the paper.

PETERBORO MEDICAL SOCIETY

A MEETING of the Peterboro Medical Society was held on February 17th, the president, Dr. G. Stewart Cameron, being in the chair. Dr. Fitzgerald, of Toronto University, was the guest of the evening, and read a paper on "Immunity."

The officers of the Peterboro Medical Society for the season, 1910-1911, are: president, Dr. G. Stewart Cameron; first vice-president, Dr. E. V. Frederick; second vice-president, Dr. C. H. Amys; treasurer, Dr. W. D. Scott; secretary, Dr. E. A. Hammond; executive committee, Drs. W. Caldwell, F. P. McNulty, and G. E. Marshall.

BRITISH MEDICAL ASSOCIATION—HALIFAX AND NOVA SCOTIA BRANCH

THE tenth regular meeting of this branch was held at the City Hall, Halifax, on February 22nd. The first paper read was by Dr. Mader, entitled, "Some Observations on Malignant Disease." Dr. Mader pointed out that there was no sharp line between malignant and benign growths, and that it was very important from the standpoint of treatment to determine the degree of malignancy in any given case. Many cases formerly believed to be malignant are now known to be benign, and surgery of malignant disease is more circumscribed than formerly. He described the condition called fibromatosis, and enumerated the points of difference between it and carcinoma. Many cases of cured carcinomata were really of this nature. He then referred to recent advances in the pathology of carcinoma and its mode of extension along the lymphatics. Dr. Mader was of the opinion that a combination of x-ray or radium treatment with conservative surgery would result in less maiming operations in many cases. He also referred to myeloma, which in the past has been treated by amputation. Resection is now done in many cases with satisfactory results.

Dr. L. M. Murray then read a paper on "Latent Gonnorrhœa in Obstetric Practice." He cited three cases of puerperal sepsis, where careful asepsis precluded the possibility of infection from without, and where investigation brought to light the gonnorrhœal nature of the infection. He believed that gonnorrhœa was the cause of puerperal infections more frequently than is commonly supposed.

THE ninth regular meeting of the British Medical Association, Halifax and Nova Scotia branch, was held in the City Hall, Halifax, on February 13th. Dr. John Stewart read a paper on "Some Points in the Pathology of Tuberculosis and in the Treatment of Surgical Cases." Dr. Stewart considered the subject under the headings of Paths of Infection and Treatment, pointing out, in the former, the increasing appreciation of the importance of the alimentary tract as a portal of infection, especially in children; and in the latter, dealing chiefly with some of the recognized methods in surgical treatment,—the vaccine treatment, by tuberculin; in osseous affections, counter-irritation; the Bier method, and a combination of this with the local use of iodoform, as employed by Mikulicz; in tubercular abscesses, aspiration followed by the injection of iodoform; in tuberculosis of the cervical glands, tuberculin, before having recourse to operation; and in joint tuberculosis in children, as a rule the expectant method, keeping in mind immobilization, Bier's method, and improvement in general health.

Dr. P. A. MacDonald reported an interesting case of genital tuberculosis. One testicle had been removed eight years previously, and when the remaining testicle became diseased, conservative treatment (curetting) was adopted; but the patient later developed tuberculous meningitis from which he died.

SOUTH WATERLOO MEDICAL ASSOCIATION

THE annual meeting of the South Waterloo Medical Association was held March 22nd, in the Library Hall, Galt. There was a large attendance of members from all parts of the county. Dr. Ryerson, of Toronto, delivered an address on Radium. The following officers were elected for the coming year: president, Dr. S. E. Charlton, Galt; vice-president, Dr. C. R. Cumming, Galt; treasurer, Dr. Woolner, Ayr; secretary, Dr. McEwan, Galt. Drs. Wardlaw and Radford, of Galt, and Dr. Lockhart, of Hespeler, were appointed a special business committee.

OTTAWA MEDICAL SOCIETY

THE regular meeting of the Ottawa Medical Society was held in the lecture room of St. Luke's Hospital on the evening of Friday, March 10th. The paper of the evening, "Some Aspects of Immunity," by Dr. Campbell Laidlaw, treated in a retrospective way with immunity as practised among early and primitive peoples. The discussion was led by Dr. C. Higgins, Dominion bacteriologist, and dealt with immunity and its various problems from the standpoint of comparative medicine. Both paper and discussion will appear in detail in the bulletin of the society, published at the end of the current year.

VANCOUVER MEDICAL ASSOCIATION

THE regular monthly meeting of the Vancouver Medical Association was held March 13th, Dr. W. B. McKechnie, vice-president, in the chair.

Dr. Seldon reported for the library site committee that the first payment of \$2,300 on the lots purchased by the society, had been made. Dr. Worthington reported for the special committee having in hand the question of medical and surgical treatment of the poor in public schools, and the proposed free dispensary. To cope with these questions the General Hospital board has been acting in conjunction with the society's committee. It is proposed to establish a well organized free dispensary and emergency branch down town. A request to enlarge the committee and to give it power to confer with charitable boards and other bodies interested, was granted, a final report to be presented at the next meeting. Drs. Gordon and Gillies were nominated for the position of genito-urinary specialist on the General Hospital staff in response to the request of the hospital.

BRITISH COLUMBIA MEDICAL ASSOCIATION

THE thirteenth annual meeting of the British Columbia Medical Association will be held in Vancouver on August 31st and September 1st, 1911. The officers of the association are: president, Dr. O. Weld, Vancouver; president, Dr. C. E. Doherty, New Westminster; treasurer, Dr. J. D. Helmcken, Victoria; secretary, Dr. A. S. Monro, Vancouver; executive committee, Drs. G. S. Gordon, R. B. Boucher, J. E. Spankie.

Papers were read by the following: Dr. Shewan, reporting a case of syphilitic nephritis in an infant three and a half months old, with a pathological report by Dr. Adami, of Montreal, who stated that the specimen was unique in his experience; by Dr. Buller, reporting a case of carcinoma at the cesophageal opening of the stomach, with some unusual features; by Dr. W. B. McKechnie, reporting two cases of fracture of the skull with depression, requiring the removal of pieces of bone, both cases making good recoveries; by Dr. Dyer, reporting four cases of acidosis in children, with treatment.

ALBERTA MEDICAL COUNCIL

THE following were elected for the ensuing four years:—Edmonton, district number one, Dr. John Park; district number two, Dr. F. W. Crang; district number three, Dr. C. W. Field; district number four, Dr. R. G. Brett; district number five (Calgary), Dr. C. J. Stewart; district number six, Dr. G. H. Malcolmson; district number seven, Dr. F. H. Mewburn. The late election was held under the new method of voting, each district electing its own representative independent of other districts. In previous elections the successful candidates were elected by the vote of the province at large, which method was not satisfactory to the great majority of the profession, as it was possible for a candidate to be elected by the votes of medical men of other districts, even though he might obtain a very small vote in his own district. An impression prevailed throughout the province that the late council favoured the old method of election of members and that the new legislation was obtained only on account of strong pressure being brought to bear on the government by the provincial Medical Association. Strong opposition to the late council developed which has resulted in the defeat of four out of six of the old council who had an opponent in the field. Dr. R. G. Brett, the veteran of Banff, was elected by acclamation.

LAMBTON COUNTY MEDICAL SOCIETY

THE annual meeting of the Lambton County Medical Society was held in the public library building, Sarnia, February 10th. Dr. Reid, of Wyoming, and Dr. Ferguson, of Courtright, read interesting papers. The following officers were elected: president, Dr. McDonald, Sarnia; vice-president, Dr. Reid, Wyoming; secretary-treasurer, Dr. Kelly, Watford. Dr. Kidd, of Wyoming, was made a member of the society. The next meeting will be held at Watford in May.

Medical Societies

ASSOCIATION DES MÉDECINS DE LA LANGUE FRANÇAISE DE L'AMÉRIQUE DU NORD :

President—Dr. H. Hervieux, Montréal. Secretary—Dr. Bourgeois, 232, rue Sherbrooke Ouest, Montréal.
Meets every second year, next reunion in August, 1913, at Montreal.

ASSOCIATION MÉDICALE O. F. DE MANITOBA :

President—Dr. J. M. O. Lambert. Secretary—Dr. G. A. Dubuc, St-Boniface, Man.

ASSOCIATION MÉDICALE DE L'OUEST DE MONTRÉAL :

President—Dr. E. G. Asselin. Secretary—Dr. Aumont, St-Henri.

ASSOCIATION MÉDICALE DU COMTÉ DE JACQUES-CARTIER :

President—Dr. P. A. Valois. Secretary—Dr. Beaudoin, Lachine.

ASSOCIATION MÉDICALE DU COMTÉ DE PORTNEUF :

President—Dr. A. Larue. Secretary—Dr. Thos. Savary, Pont-Rouge.

ASSOCIATION MÉDICO-CHIRURGICALE DU DISTRICT DE JOLIETTE :

President—Dr. C. Bernard. Secretary—Dr. A. Roch, St-Gabriel de Brandon.

SOCIÉTÉ MÉDICALE DE CHICOUTIMI ET DU LAC ST-JEAN :

President—Dr. Poliquin. Secretary—Dr. A. Riverin, Chicoutimi.

SOCIÉTÉ MÉDICALE DE MONTMAGNY :

President—Dr. Gosselin. Secretary—Dr. Paradis, Montmagny.

SOCIÉTÉ MÉDICALE DE QUÉBEC :

President—Dr. D. Brochu. Secretary—Dr. J. Dorion, Québec.

SOCIÉTÉ MÉDICALE DE RIMOUSKI :

President—Dr. L. F. Lepage. Secretary—Dr. J. A. Ross jr., Ste-Flavie Station.

SOCIÉTÉ MÉDICALE DES COMTÉS DE BEAUCE ET DORCHESTER :

President—Dr. Fortier. Secretary—Dr. L. M. Déchéne, Beauceville.
Regular meetings, March, June, September, and December.

SOCIÉTÉ MÉDICALE DE ST-JEAN (IBERVILLE).

President—Dr. Moreau. Secretary—Dr. Duval (St-Jean d'Iberville).

SOCIÉTÉ MÉDICALE DE ST-HYACINTHE :

President—Dr. J. C. S. Gauthier. Secretary—Dr. Viger, de St-Hyacinthe.

SOCIÉTÉ MÉDICALE DE SHEFFORD :

President—Dr. J. A. E. Brun. Secretary—Dr. A. Lessard, Granby, Co. de Shefford, P.Q.
Regular meetings twice a year.

SOCIÉTÉ MÉDICALE DE TROIS-RIVIÈRES :

President—Dr. DeBlois. Secretary—Dr. O. Darche, Trois-Rivières.

SOCIÉTÉ MÉDICALE DE VALLEYFIELD :

President—Dr. Ostigny. Secretary—

SOCIÉTÉ MÉDICALE DU COMTÉ DE CHAMPLAIN :

President—Dr. Trudel. Secretary—Dr. Bellemare, St-Narcisse.

SOCIÉTÉ MÉDICALE DU COMTÉ DE KAMOURASKA :

President—Dr. B. Vézina, St-Alexandre. Secretary—Dr. U. J.-I. Pajean, de Ste-Anne.
Regular meetings, February, June, and October.

SOCIÉTÉ MÉDICALE DU COMTÉ DE MASKINONGÉ :

President—Dr. L. A. Plante. Secretary—Dr. DuHamel.

SOCIÉTÉ MÉDICALE DU COMTÉ DE TERREBONNE :

President—Dr. Grignon. Secretary—Dr. H. Prevost, St-Jérôme.

SOCIÉTÉ MÉDICALE DU COMTÉ DE WOLFE :

President—Dr. Thibault. Secretary—Dr. A. Pelletier, St-Camille.
Regular meetings, the first Tuesday of March, June, September, and December.

SOCIÉTÉ MÉDICALE DU DISTRICT D'OTTAWA :

President—Dr. Aubry. Secretary—Dr. J. E. D'Amour, Papineauville.